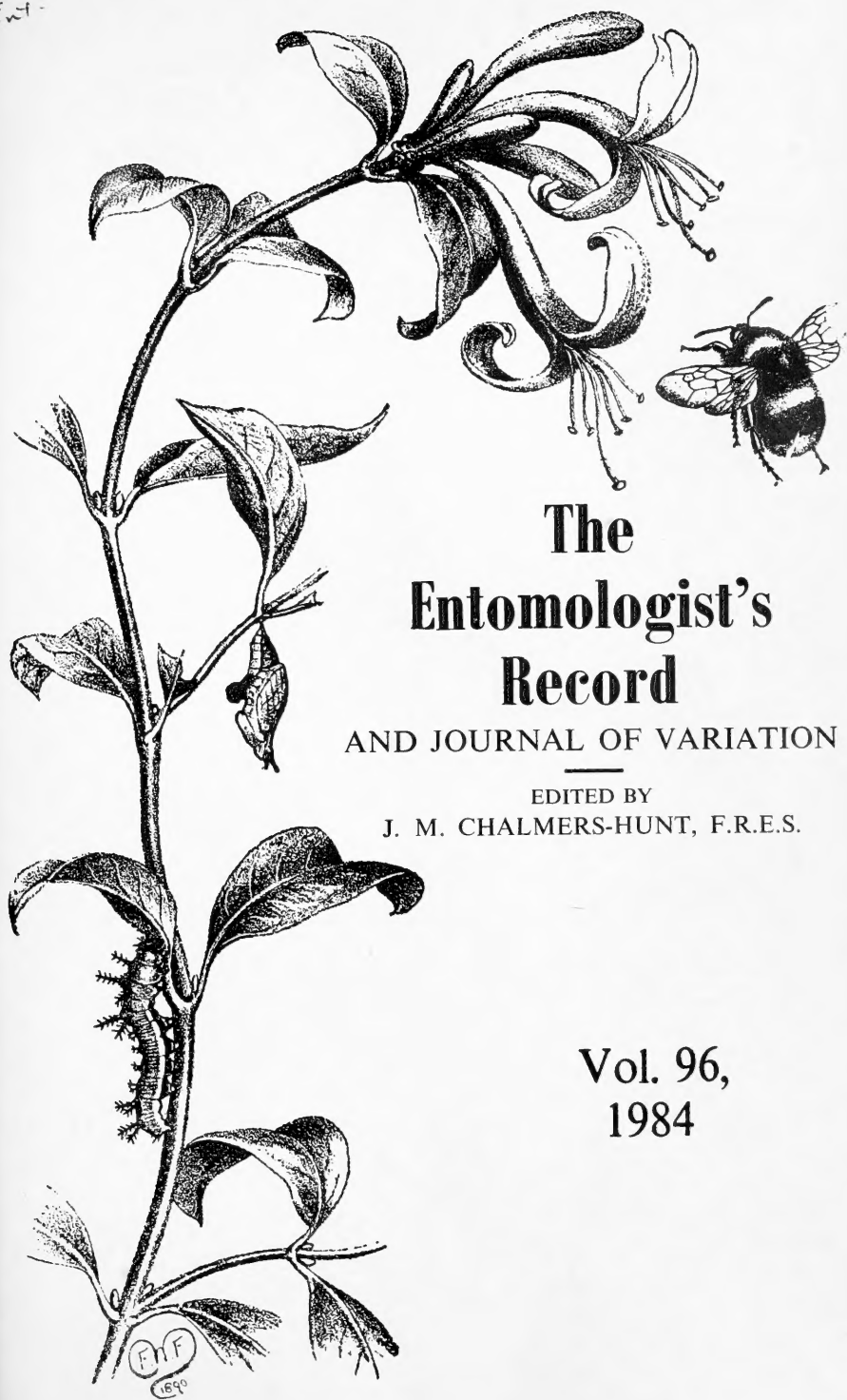






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THE EXTRAORDINARY TALE OF THE WHITE PROMINENT 1
THE EXTRAORDINARY TALE OF THE WHITE
PROMINENT: *LEUCODONTA BICOLORIA*
D. & S. IN COUNTY KERRY

By RAYMOND F. HAYNES*

The White Prominent is an extremely rare entomological prize which has only been taken at Burnt Wood, Staffordshire some 120 years ago (Chappell, 1865; Sidebotham, 1874); near Exeter, Devon, where one is said to have been captured in 1880 (Barrett, 1896); and, in Co. Kerry in the Irish Republic, where the majority have occurred. However, its discovery in Kerry and its subsequent history there is so interesting and curious, that I have considered it worthwhile to produce as full an account as possible, in an attempt to relate the complete story from the numerous references scattered about the natural history journals.

Although Barrett (1896), Baynes (1964), Donovan (1936) and Kane (1901) all give the year of its discovery as 1859, the true date should be 1858 as the following testifies: "Mr. Peter Bouchard, of Sutton, Surrey, a collector of insects of great ability, went in the summer of 1858, to Ireland to collect moths and beetles. He was engaged on the 1st July 1858 hunting for his prey on Colonel Herbert's estate, about 5 miles from the town of Killarney, not far from the far-famed Muckross Abbey. When beating the birch, a curious white moth, entirely new to him, fell to the ground. This he picked up and in a state of delight that can only be guessed by one who is not a collector, Mr. Bouchard killed it and set it out . . . [here follows a description of the moth] . . . Mr. Bouchard worked the locality for more than a week, but without further success. On writing to London, he found that the species was *Notodonta bicolor*". "Continental specimens of it exist in the British Museum; but up to this it had been unrepresented in the British collection. Mr. Bouchard parted with his specimen to Mr. Waring of London" (White, 1858).

The above capture was also recorded as follows: "A specimen of this conspicuous and pretty species was taken near Killarney, last July, by Mr. Bouchard in an extensive birchwood. The specimen is in Mr. Waring's collection" (Stainton, 1859). A further note had also appeared some months before, recording Bouchard's capture and informing readers that the specimen had been exhibited at a meeting of the Entomological Society of London (Stainton, 1858).

The next reported capture was in 1859, again by the fortunate Bouchard and reads: "Another specimen of this insect was taken near Killarney, by Mr. Bouchard at the end of June" (Stainton, 1860). This specimen was apparently seen by Edwin Birchall, who wrote in his diary: ". . . On our way back called at the Tower, to

*Little Dorking", Mill Road, Killarney, Co. Kerry, Ireland.

see P. Bouchard: he showed us a splendid male specimen of *Noto-donta bicolora*, captured the previous week. . ." (Birchall, 1859).

That same year, a certain Dr. A. Wallace M.B. in describing his experiences in Ireland observed: "At Killarney I heard from the carmen that a gentleman and his wife had been there with insect nets and had offered £2.2s. to anyone who would bring them the 'white moth'. From the way in which the carmen spoke they evidently believed the whole thing to be the jest of an insane person, and were much astonished when I asserted the truth of the value of the insect. How many white butterflies were brought to them, I did not hear . . ." (Wallace, 1859).

Reports of the occurrence of the White Prominent in Kerry after 1859 seem to differ slightly. Kane (1901) mentions another specimen in 1860 found in a spider's web; whilst Barrett (1896) informs us: "Several more were taken by Bouchard in the same place — Mr. S. Stevens believes seven or eight — and the wings of one found at the foot of a tree".

Some years later the following brief Note appeared: "It is reported that Mr. Bouchard has again taken this rarity [*L. bicoloria*] in the Killarney district" (Anon., 1864); which report was corroborated it seems by Dr. H. G. Knaggs in his "Table of Local and Scarce British Lepidoptera captured in 1864" (Knaggs, 1865).

In 1867, the existence of *L. bicoloria* was at last confirmed by someone other than Bouchard. A Mr. J. Ray Hardy of Manchester captured a male specimen, and in the following year beat a larva from which he bred a female that emerged in 1869. Both the moth and the caterpillar were found about a mile from the Mucross Hotel (Hardy, 1874).

Although the evidence up until then of the presence of *L. bicoloria* at Killarney would surely seem to have been satisfactorily proved from the published records; yet, as several years went by, and no other collector was fortunate enough to turn up a fresh specimen, doubts began to be cast on the validity of Bouchard's supposed captures. Bouchard was now dead, having succumbed in 1865 from a bout of fever contracted during a trip to the West Indies. However, Birchall (1867a) wrote defending Bouchard's integrity in the following words: "Doubt has been cast upon the native origin of the specimens said to have been captured at Killarney by the late Peter Bouchard. I can only say I saw two specimens in his hands there, which had certainly been alive within a few hours, and I do not know any ground to suspect a deliberately planned fraud; still the fact that the most determined search, year after year, by some of our best collectors, failed to produce further examples was a discouraging circumstance, and, considering the temptation which the capture of so fine an addition to our native insects offered to a man in Bouchard's circumstances, perhaps justified the scept-

ticism which has existed. I have, however, the pleasure of stating that Mr. John Hardy, Jnr. of Manchester, has this season (1866) captured a male specimen of *N. bicolor* near the spot which Bouchard pointed out to me as that in which he took the insect; and there is therefore no reason why we should refuse to include the species in our lists".

Later, Birchall (1867b) contributed an article in which he listed some of the species known to occur at Killarney, and then went on to say: "The most interesting of the above named insects *Notodonta bicolor*, I have never been fortunate enough to capture, though I have made several journeys to Killarney with that object. A man is apt to suffer in fame if he finds a species that cannot be discovered again, and something of this sort was poor Bouchard's fate in connection with his discovery of *bicolor* at Killarney. The capture of specimens of the insect, both in the larva and imago state, during the summer of 1866, I am glad to say removes any ground of doubt as to its truly indigenous character; all the specimens yet taken have been beaten from birch trees on Muckross peninsular early in June . . .¹

The following extract from an account by Samuel Stevens on entomology in Ireland reads: "In marshy places . . . I was very pleased to meet with parties who saw *alive* several specimens of *N. bicolora* (or Micholora as they call it), there taken by the late Peter Bouchard; and I was pointed out a birch tree, where he had found a specimen at rest on the trunk. I was too early myself for this insect; but I spent a day in the plantations where they were taken, and found it very hard work, not being at the time very well. I don't see any reason why this insect should not occur again there, if any good collector could spend a few weeks on the spot, and is not afraid of hard work and getting wet feet in the swampy, boggy places where it occurs'. (Stevens, 1871).

Six years after defending Bouchard's integrity, Birchall (1873) manifested a remarkable *volte-face* by listing in the *Entomologist's Monthly Magazine* some 16 species that he considered ought to be deleted from the Irish list, among them *L. bicoloria*. His article caused quite a stir, being followed up in the same journal by several letters hotly defending Bouchard's reputation and utterly refuting Birchall's doubts on the authenticity of *L. bicoloria* as an Irish species. However, Birchall nothing daunted, refused to be shaken in his attitude and in his last letter (Birchall, 1874), openly stated that he himself believed the *L. bicoloria* specimens were of foreign origin. Finally, the Editor felt obliged to close all further communications on the subject.

No more news of the White Prominent was forthcoming for

¹It should be mentioned that there is a discrepancy of dates here, as Hardy gave the year of this first capture as 1867, as stated earlier.

some years, until W. F. de Vismes Kane read a long paper to the Royal Irish Academy. In this, he gives a most interesting account of his investigations at Killarney in 1885, regarding the occurrence there of *Minucia lunaris* D. & S. and *L. bicoloria*. He had made enquiries at Tower Lodge (then owned by Col. Herbert) on the Upper Lake, where Bouchard had stayed with a family, the husband being a deerkeeper and now an old man. From him, Kane received a corroborative story of the discovery in 1858 of Bouchard's original specimen of *L. bicoloria*. Kane also states in the same account that a "report, moreover is current, that on a post in the 'West-meadows' of Mucross demesne another specimen was found a few years since by a labourer, who sold it for 10/- to a naturalist then staying at an hotel in Killarney. Of this I was told a notice appeared in some Natural History Journal, which I have not been able to trace . . . " (Kane, 1886).

Nothing more was heard of the elusive White Prominent until 1892, in which year Miss Vernon of Clontarf showed Kane her collection of insects, amongst which were "two rather poor specimens of *Notodonta bicolor* from a new locality in Kerry" (Kane, 1901). Donovan (1936) elucidated that the locality referred to, was Ardttully near Kenmare.

On the occasion of the sale on 22nd October 1907 of the Rev. G. H. Raynor's British Lepidoptera, a specimen of *L. bicoloria* (originally taken by Bouchard at Killarney) induced bidding up to £4.10s. (Anon., 1907). This must have been a princely sum of money in those Edwardian days.

The next collector to take this rare moth was the Rev. Canon G. Foster, who describes how in 1912, he sheltered beneath a hazel tree in the neighbourhood of the Glencar Woods during a thunderstorm and was lucky enough to beat out an imago of *L. bicoloria*, when the storm was over. The day after, a second specimen was found on a window ledge by some friends with whom he was staying (Foster, 1932).

Five years later, in June 1917, an energetic collector named L. H. Bonaparte Wyse was cycling along the Kenmare road between Muckcross and Dennyunihiy, when he noticed a white moth settle on a holly leaf. This he caught, put it in a pillbox and found it to be a male *L. bicoloria* in good condition (Wyse, 1917).

A further 15 years then elapsed before any more news of the Prominent became known. In 1932, Col. C. Donovan was fortunate enough to beat three larvae in a wood fairly near Kenmare (Donovan, 1932). A year later, in 1933, Donovan collected no less than 18 larvae somewhere near Killarney in the region of the Middle Lake. This extraordinarily lucky lepidopterist apparently had no trouble in breeding the caterpillars through to maturity and the adults emerged safely in due course (Donovan, 1936). The same author

also mentions a single larva taken at Killarney in 1936 by a sister of his, Mrs. G. E. Lucas (Donovan, 1936: Supplement, p.2). The late H. C. Huggins informed me that his collection (Huggins' collection is now in the BMNH) contained one of the above-mentioned Donovan-bred *L. bicoloria*; and Chalmer-Hunt (1982) states there are four *L. bicoloria* in the National Museum of Ireland, gives the details of these and a natural size photograph of one of them, a Killarney specimen bred by Donovan on 24th April 1934.

The last *L. bicoloria* to have occurred, so far as is known, was taken by Mrs. G. E. Lucas who found a perfect male "settled on a mossy bank under trees" in the Killarney district, on 12th May 1938, an unusually early date for this species (Lucas, 1938).

Several collectors have since tried unsuccessfully with modern m.v. lamps to trap the much sought after White Prominent (Huggins, 1960). It seems strange that nothing has been heard of the moth now for over 40 years; but judging from its past history we may confidently predict that *L. bicoloria* will again turn up at long last.

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EUMICHTIS LICHENEA HBN. (FEATHERED RANUNCULUS): THANET CRESS AS A MAJOR LARVAL FOODPLANT. — Although it is well known by many lepidopterists in the South East, that to obtain *E. lichenea* one journeys to the Sussex coast near Rye on a night in May to find the larvae in plenty among the conspicuous flowering clumps of *Cardaria draba* (Cruciferae), I believe this plant has not been noted previously in print as a foodplant of *lichenea*. I made such a visit in 1973, larvae were found, sand was obtained for the caterpillars to hide and pupate in, and in September moths of a relatively dark form emerged. This alien plant from S. and C. Europe and western Asia is now well established in many places along the south coast; has it become the foodplant of other colonies of *lichenea*? — B. K. WEST, 36 Briar Road, Bexley, Kent.

THE PEACOCK AND THE TUBE. — The summer of 1983 seems to have been exceptionally good for the Peacock Butterfly (*Inachis io*) in the London area. Buddleia plants in Highgate were smothered with specimens in late July and August. I do think it worthwhile, however, to record the circumstances of one unusual observation. Arriving at Leicester Square Tube Station after a weekend in Paris on August 22nd a perfect male *io* was fluttering about with some determination on the northern platform of the Northern Line. The time was 22.00, but it was obviously looking for suitable hibernation sites. It seems most unlikely that it could have made its way into the underground system of the Tube network so it must have been blown for miles by passing trains from one of the places where the Tube transitions from under- to overground. — TORBEN B. LARSEN, 23 Jacksons Lane, London, N6.

BUTTERFLIES IN CENTRAL SPAIN IN MAY 1982, INCLUDING A RECORD OF NORTHWARD MIGRATION

By J. F. BURTON* and D. F. OWEN**

(Concluded from Vol. 95 page 246)

Ilex Hairstreak: *Nordmannia ilicis* Esper. Sierra de Gredos: locally common around Cork and Holly Oaks in the neighbourhood of Corchueta, Navalcan and Las Ventas de San Julian, 17-22.v.

False Ilex Hairstreak: *N. esculi* Hübner. Sierra de Gredos: apparently common in the same localities and on the same dates as the last species. A male and a female collected by D.F.O. were of this species, which is stated by Higgins and Riley (1980) to fly in June and July.

Green Hairstreak: *Callophrys rubi* L. Sierra de Guadarrama: frequent in Pyrenean Oakwood, Miraflores, 11-14.v.

Small Copper: *Lycaena phlaeas* L. Sierra de Guadarrama: a few in open places around Miraflores, 11-14.v., and on the mountain slopes above Rascafria, 15.v. Sierra de Gredos: common along the Canal de Rosarita, near Madrigal de la Vera and a few elsewhere in the foothills and below the Puerto del Pico, 17-23.v.

Also recorded in the last-named locality and many other places in the Sierras de Gredos and Guadarrama by Eitschberger and Steiniger (1973b) in August, 1972.

Sooty Copper: *Heodes tityrus* Poda. Santander to Burgos road: one by the roadside on the Puerto de Carrales (1,020 m.), 10.v.

Long-tailed Blue: *Lampides boeticus* L. Sierra de Guadarrama: Guadalix: one, 11.v.; several seen in the neighbourhood of Miraflores, 11-14.v. Sierra de Gredos: frequent in the foothills between Arenas de San Pedro and Madrigal de la Vera, 16-22.v., and below and on the Puerto del Pico, where some appeared to be migrating north through the pass on 23.v. with *Colias crocea* and other Pierids.

Recorded in August, 1972 in the Sierra de Guadarrama (San Rafael) and in the Sierra de Gredos (Hoyos del Espino, Rio Tormes and Barajas) by Eitschberger and Steiniger (1973b).

Holly Blue: *Celastrina argiolus* L. Sierra de Guadarrama: common in the Pyrenean Oak woods near Miraflores, 11-14.v. and in the pinewoods below the Puerto de Canencia (1,600 m.), 13.v.; one on the mountain slopes above Rascafria, 15.v. Sierra de Gredos: a few seen in the foothills between Madrigal de la Vera (Canal de Rosarita, etc.) and Arenas de San Pedro, 17-22.v.

Panoptes Blue: *Pseudophilotes panoptes* Hübner. (Treated by some authors as a subspecies of *P. baton*). Sierra de Gredos: D.F.O.

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caught a female which was subsequently identified as this species, but does not recall the precise date or locality. However, he believes he took it on the southern slopes of the Puerto del Pico, north of Cuevas del Valle on 23.v.

False Baton Blue: *P. abencerragus* Pierret. Sierra de Guadarrama: a female collected by D.F.O. from heathy ground amongst rocky outcrops at ca.1,300 m. on the northern outskirts of Miraflores de la Sierra on 14.v. Higgins and Riley (1980) give 1,200 m. as the upper limit of the altitudes frequented by this species in Spain, and state that it is "widely distributed but very local from Aranjuez southwards". Miraflores is about 85 km. north of Aranjuez.

Spanish Brown Argus: *Aricia agestis cramera* Eschscholtz. Sierra de Guadarrama: several near Miraflores and Guadalix, 11-14.v. Sierra de Gredos: occasionally seen in the foothills, 17-22.v. and at Oropesa on 18.v.

Mazarine Blue: *Cyaniris semiargus* Rott. Sierra de Gredos: many seen north of Cuevas del Valle on the southern slopes below the Puerto del Pico pass on 23.v., where a female was watched laying eggs singly on Spanish White Broom *Cytisus multiflorus*. D.F.O. collected one female. This species is described by Manley and Allcard (1970) as having only a scattered distribution in Spain, and Higgins and Riley (1980) say that it is "often rare in Spain and Portugal".

Common Blue: *Polyommatus icarus* Rott. Sierra de Gredos: one female collected by D.F.O. near Madrigal de la Vera. We presume the species is at least not uncommon here.

Large Tortoiseshell: *Nymphalis polychloros* L. Sierra de Guadarrama: large brood of 50+ 3rd instar larvae on a young Elm *Ulmus* sp. beside stream between Guadalix and Miraflores de la Sierra, 11.v., from which D.F.O. collected some and reared 12 imagines. One adult seen in Pyrenean Oakwood, 12.v.; one adult near Arenas de San Pedro, 16.v. De Freina (1975) recorded this species in the Sierra de Guadarrama in late June, 1973 at El Escorial and Eitschberger and Steiniger (1973b) saw one imago at Cecedilla in August, 1972.

Peacock: *Inachis io* L. Sierra de Guadarrama: young larvae were numerous on nettles near a stream between Miraflores and Guadalix, 11.v.

Red Admiral: *Vanessa atalanta* L. Santander to Burgos road: a few at Pesquera de Ebro, 10.v. Sierra de Guadarrama: a few in Pyrenean Oakwood near Miraflores, 11-14.v. Sierra de Gredos: a few along the road between Cuevas del Valle and Puerto del Pico, over the pass of which a few participated in the northward migration on 23.v. described in detail earlier. Several noted in the foothills between Arenas de San Pedro and Madrigal de la Vera.

Painted Lady: *Cynthia cardui* L. Sierra de Guadarrama: one in Miraflores town, 12.v. Sierra de Gredos: one or two noted 23.v. along the road between Cuevas del Valle and Puerto del Pico, over

the pass of which a very few participated in the northward migration described earlier. Also seen occasionally between 17-22.v. in the foothills between Arenas de San Pedro and Madrigal de la Vera.

Small Tortoiseshell: *Aglais urticae* L. Sierra de Guadarrama: full grown larvae numerous on nettles between Miraflores and Guadalix, 11.v., one adult and batches of small larvae on nettles on mountain roadside above Rascafria, 15.v.

Comma: *Polygonia c-album* L. Sierra de Guadarrama: several near Miraflores, 11-14.v. Sierra de Gredos: 4 or 5, all *hutchinsoni*, beside the Canal de Rosarita, near Madrigal de la Vera, 18-21.v.; also one at Oropesa, 18.v. and several near Corchuela. It is interesting to note that Manley and Allcard (1970) give July as the time of appearance of *hutchinsoni* on the wing, while Higgins and Riley (1980) give June.

Queen of Spain Fritillary: *Issoria lathonia* L. Sierra de Guadarrama: several in a large, rather boggy clearing interspersed with thickets of Broom *Cytisus* sp. and Gum-cistus *Cistus ladanifer* in the pinewoods north of the Puerto de Canencia (1,600 m.) on 13.v.; common on mountain slopes above Rascafria, 15.v.

Also recorded from the Guadarrama (El Escorial, San Rafael, Cercedilla and El Ventorillo) by Eitschberger and Steiniger (1973b) and de Freina (1975).

Glanville Fritillary: *Melitaea cinxia* L. Sierra de Guadarrama: several fresh adults of a large and bright form in the Pyrenean Oakwood near Miraflores, 11-14.v.; D.F.O. collected two specimens.

Marsh Fritillary: *Euphydryas aurinia* Rott. Sierra de Guadarrama: a few by stream in Pyrenean Oakwood near Miraflores, 11-14.v., and two collected by D.F.O.; one by boggy stream between Guadalix and Miraflores, 11.v. Recorded also in the Guadarrama (El Escorial) by de Freina (1975) in late June, 1973.

Rock Grayling: *Hipparchia alcyone* Denis & Schiffermüller. Sierra de Guadarrama: one freshly emerged imago in Pyrenean Oakwood near Miraflores, 13.v. — an apparently early date as Manley and Allcard (1970) write that "in some localities it appears as early as the end of May". This species was also noted in the Guadarrama at El Escorial by de Freina (1975).

Piedmont Ringlet: *Erebia meolans bejarensis* Chapman. Sierra de Guadarrama: several freshly emerged imagines of this large, bright race, well known as an inhabitant of this mountain range, were seen and three males collected between 11th and 14th May, apparently at least a fortnight earlier than usual as Manley and Allcard (1970) say that it appears at the beginning of June "at lower levels", while Higgins and Riley (1980) give the end of June. These were flying at about 1,300 m. A few *Erebia* butterflies, probably of this species, were also seen, but not caught, on 15th May on the mountain slopes above Rascafria.

Meadow Brown: *Maniola jurtina hispulla* Esper. Sierra de Guadarrama: several in open grassy places among the woods near Miraflores, 11-14.v. Sierra de Gredos: common in hayfields and on roadside verges in the foothills between Arenas de San Pedro and Madrigal de la Vera, and on the banks of the Canal de Rosarita, 17-22.v.

Spanish Gatekeeper: *Pyronia bathseba pardilloi* Sagarra. Sierra de Gredos: locally common in the southern foothills between Arenas de San Pedro and Madrigal de la Vera (e.g., around Poyales del Hoyo and along the banks of the Canal de Rosarita), 16-22.v.

Small Heath: *Coenonympha pamphilus* L. Sierra de Guadarrama frequent in the Pyrenean Oakwood near Miraflores, 11-14.v.; several between Miraflores and Guadalix, 11.v. Sierra de Gredos: locally plentiful in the foothills between Arenas de San Pedro and Madrigal de la Vera, 17-22.v.

Speckled Wood: *Pararge a. aegeria* L. Sierra de Guadarrama: a few in the Pyrenean Oakwood near Miraflores, 11-14.v., and in the pinewoods on the Miraflores to Puerto de Canencia road, 13.v. Sierra de Gredos: a few in wood beside the Poyales de Hoyo to Candeleda road, 16.v., and along the Canal de Rosarita, near Madrigal de la Vera, 16.v. and 21.v.

Wall Brown: *Lasiommata megera* L. Sierra de Guadarrama: numerous in the Pyrenean Oakwood near Miraflores, 11-14.v.; several along Miraflores to Guadalix road, 11.v. Sierra de Gredos: common in the foothills between Arenas de San Pedro and Madrigal de la Vera and the plain to the south; also on the road from Cuevas del Valle to the Puerto del Pico, 17-23.v.

Large Wall Brown: *L. maera* L. Sierra de Guadarrama: one collected by D.F.O. in the Pyrenean Oakwood near Miraflores, 11.v., and another seen on the Miraflores-Guadalix road on the same date.

Grizzled Skipper: *Pyrgus malvae malvoides* Elwes and Edwards. We encountered this southern race of *malvae* only once — on a grassy expanse beside the Miraflores-Puerto de Canencia road in the Sierra de Guadarrama. Here several were on the wing on 13.v.

Mallow Skipper: *Carcharodus alceae* Esper. Sierra de Gredos: fairly common on the flowery banks of the Canal de Rosarita, near Madrigal de la Vera, and in adjacent meadows, 21.v., and also near Arenas de San Pedro on 16.v. One collected from each locality by D.F.O.

Small Skipper: *Thymelicus flavus* Brünnich. Sierra de Gredos: fairly common by roadsides and on canal banks between Madrigal de la Vera and Arenas de San Pedro, 16-22.v.

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A SELDOM-NOTICED HABIT OF *NEOCNEMODON VITRIPENNIS* MG. (DIPT.: SYRPHIDAE). — I have repeatedly found single females of this hover-fly, the only British *Neocnemodon* that is fairly common, on and about the trunks of poplars — both Lombardy and Black Italian — in the S. London suburbs, frequently enough to rule out mere chance. The association has, I think, received but little notice in the literature. In fact, the sole reference I have seen to anything of the sort is a Continental observation cited by Coe (1953, *Handb. Ident. Brit. Ins.*, 10(1): 59): "The larvae of *C. vitripennis* were found sucking Coccids on *Populus italica* by Heeger. . .". This seems to afford a satisfactory explanation of the above-mentioned habit of adult females in Britain; they would appear to frequent the trees for oviposition, attracted by the presence of certain scale-insects presumably attached to poplars and living on the trunks. So far, however, I have not been able to confirm this hypothesis, or even to find males accompanying such females, but it remains extremely probable. Of course, odd females of *vitripennis* occur away from poplars, like the males, on flowers or among foliage in gardens etc.; but, in my experience, they are fewer and more sporadic. — A. A. ALLEN.

MICROLEPIDOPTERA IN WESTER ROSS

By REV. DAVID AGASSIZ*

At the end of May 1983 my wife and I stayed for a few days at Kinlochewe, West Ross. The principle objective was to learn something of the life history of *Plutella hassi* Staud. recently added to the British list by Kyrki & Jalava. It became clear, as expected, that the larvae of that species were not to be found so early in the year as no Cruciferae were yet in evidence on Beinn Eighe. Knud Larsen, who has collected the species in Norway, had suggested (pers. comm.) that the larva probably occurs later in the summer than the moth and I feel sure he is right. However our journey was not entirely fruitless.

Swammerdamia compunctella Herr.-Schäff.

This species has been little understood in Britain since its discovery by Metcalfe in 1933, even though there have been a number of recent records. Metcalfe's suggestion that birch is the foodplant has never been substantiated and the chief source of information on its life history was an article by Schutze written in 1931, where he describes it as spinning the shoots of rowan (*Sorbus aucuparia*) preferring small bushes in the shade. I had resolved to look for this larva and the very first day we were rewarded.

In the Beinn Eighe National Nature Reserve on the foothills close to Loch Maree is a fine forest of native Scots Pine. It forms open woodland quite unlike the Forestry Commission's plantations of that species where little light penetrates the branches between rows of trees. Amongst the heather and *Vaccinium* beneath the pines are small rowan seedlings, and on these the larvae were found, usually in the topmost shoot. The loose spinnings were quite conspicuous sometimes being visible from several metres away; there were often two larvae per web, sometimes just one, but I never found more than two. All spinnings found were within a metre of ground level, sometimes only about 15 cm above the ground. A more extensive search of the area over the next few days showed these larvae to be quite common, sometimes the seedlings were growing in the open, but still near the pine forest. None was found on a mature tree of *Sorbus aucuparia*. On the same seedling rowans drooping shoots were common which contained the larvae of *Argyresthia semifusca* Haw., but these will also attack larger trees.

The full grown larva of *S. compunctella* is of typical *Swammerdamia* spindle-shape, it varies from rich deep red to dark brown, the dorsum is paler or whitish with a dark central line, the sides are

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white sometimes interrupted or nearly interrupted by a reddish patch on each segment; beneath it is dark brown, the legs are dark brown or black. The head and plate of the second segment are blackish, divided by a pale central line.

The larva is stated to overwinter when young in a dense white cocoon, it then feeds up quickly as soon as the leaves appear. The pupa is contained in a semi-opaque white cocoon which in turn is slung in a light spinning on or near the ground. The adult emerges after about two weeks, mine all appeared between 13th and 17th June.

The adults were rather constant in markings and size, having a wingspan of 14-15 mm.

Aethes rutilana (Hübner.)

At around 550m. (1800 ft) on the north easterly slopes of Beinn Eighe grows the prostrate juniper *Juniperus communis nana*; on the rather bare mountain side it is hardly any higher than the *Calluna*, *Vaccinium* and *Empetrum* which surround it. Amongst it I noticed a tight spinning and further searching revealed more; although a cold north easterly wind did not make searching an enjoyable task we collected a bag of spinnings in two short visits without much difficulty. I wondered whether they might be *Dichomeris juniperella* (Linn.) but when a pupa was examined it was found to be too small. I was, however, surprised and delighted when six specimens of *A. rutilana* emerged between 20th and 25th June, two further pupae had died.

Hitherto the species has been known only from the chalk downs in southern England where Bradley and Tremewan describe it as rare and may now be extinct in some localities. This then is a remarkable extension in the known range of this species in the British Isles.

My thanks are due to the N.C.C. for their co-operation and to the wardens at Beinn Eighe NNR for their assistance.

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THE OCCURRENCE OF COCCINELLIDAE IN SUBURBAN HABITATS

By LINDA J. LOSITO*

I would like to make a number of points regarding D. F. Owen's "Fluctuations in Abundance of Coccinellidae" (*Ent. Rec.* 1982, **94**: 225-228; 1983, **95**: 29-31). Having carried out a similar study of an Oxfordshire garden since 1976, it is apparent that the Malaise trap alone does not give a complete picture of the suburban habits of ladybirds. The site, approximately 348 m², has yielded a list of twelve Coccinellidae, two of which have never appeared in Malaise trap samples (Table 1).

Certain assumptions about the relative abundance of these ladybirds on the site could be made from this list i.e. that only four species are at all common, while the rest are occasional migrants. Further observations lead me to believe otherwise.

Psyllobora 22-punctata both breeds and overwinters in the garden. Large numbers of the distinctive yellow larvae regularly appear, feeding on the mildewed leaf surfaces of *Ranunculus repens*. Their feeding habits have been well-documented by Turian (1969). In winter, the adults hide amongst any available vegetation, and almost every batch of cut spinach, cabbage or brussel sprouts will contain several specimens in the leaves.

The same crops yield overwintering adults of *Coccinella 7-punctata* and *Calvia 14-punctata*; these two species are also found amongst weeds and in grass tussocks. *C. 14-punctata* has been reared from pupae on *Miscanthus sinensis*, an ornamental grass which always supports a large population of aphids and *Adalia 2-punctata* larvae. The large grey larvae of *C. 7-punctata* still appear here every year, though never in such quantities as 1976. I do not support Dr. Owen's view that simply because the adults are now appearing in small numbers in his Leicester trap samples they have ceased to breed completely in gardens.

Mating pairs of *Adalia 10-punctata* occur every year on a particular shaded plum tree. I have watched them regularly in the hope of observing, with no success, the cross-breeding which is reputed to occur with *A. 2-punctata* (Marriner 1926). The putative hybrid *Adalia X biabilis* is often seen.

Calvia 14-guttata also seems to prefer the shady end of the garden, occurring most frequently on sloe and elderberry. It is probably for this reason that it very seldom appears in the Malaise trap, which is situated in a sunny border. This species has not yet been seen breeding, and may be coming in from Wytham Woods, where it is relatively common.

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	1976	1977	1978
<i>Coccinella 7-punctata</i> L.	529	43	10
<i>Coccinella 11-punctata</i> L.	173	5	—
<i>Adalia 2-punctata</i> (L.)	181	100	133
<i>Adalia 10-punctata</i> (L.)	—	3	7
<i>Psyllobora (Thea) 22-punctata</i> (L.)	—	—	1
<i>Calvia (Propylea) 14-punctata</i> (L.)	290	93	53
<i>Calvia 14-guttata</i> (L.)	—	—	1
<i>Tytthaspis 16-punctata</i> (L.)	1	2	—
<i>Exochomus 4-pustulatus</i> (L.)	—	1	2
<i>Chilocorus renipustulatus</i> (Scriba)	—	1	—
<i>Neomyzia oblongoguttata</i> (L.)	—	—	—
<i>Rhyzobius litura</i> (F.)	—	—	—

Table 1. Coccinellidae trapped in an Oxford garden, showing numbers taken by Malaise trap over three years.

Coccinella 11-punctata was very abundant in 1976, feeding on potato aphids, and has since declined in numbers. However, it did breed, and several pupae were reared. *Neomyzia oblongoguttata* has only been taken once in a light trap, and never observed since 1976. *Exochomus 4-pustulatus* and *Tytthaspis 16-punctata*, another mildew feeder, occur in relatively small numbers each year, but are certainly more abundant than the Malaise trap would indicate. *Rhyzobius litura* is very common amongst piles of dead vegetation, but since it does not fly, has never appeared in the trap.

Malaise trapping is not an entirely random method of insect sampling. To collect the maximum number of garden insects, the trap has to be sited in a sunny, freely accessible flower border. It will thus favour nectar and aphid-seeking insects, while the shade-loving or fungus-feeding species will be under-represented. I demonstrated this to my own satisfaction in 1976, by running a second trap in a damp shady area. Very few insects were taken, probably because a colder spot will produce less flight activity, for the same area has subsequently proved very rich for a whole range of species using different trapping methods. Furthermore, species taken here were not always represented in the main trap at all.

The Malaise trap is an important tool, but should not be used in isolation particularly when sampling beetles. Many beetle species do not fly, and of those that do, the response of many to hitting

the netting of a trap is to drop and walk away. I have obtained over two hundred species of beetle from the Oxford garden (Losito, in prep.) and only a small proportion of these were from trap samples. Other trapping methods give a much better indication of the role and feeding habits of a particular species, and show that the garden sites are much less uniform than is indicated by Malaise trapping. Incidentally, *Episyrphus balteatus*, the aphidophagous hoverfly, is not specific to cabbage aphids in my garden as it appears to be in Leicester. I have reared it from a whole range of plants since 1976, including *Miscanthus sinensis* and the cultivated rose; it is always particularly numerous on the Opium Poppy, *Papaver somniferum*.

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CATOCALA FRAXINI L. IN SURREY. — A male in good condition came to a lighted window of Croydon College, Croydon on 21st September 1983. It was let in somewhat fortuitously by a kind-hearted technician who considered the night air was a little cold for it. The moth was allowed to roam the laboratory until the following evening when it was promptly identified by a lecturer, Mr. Allan Pearson, who succeeded in capturing it. — D. C. LEES, 74, Woodcrest Road, Purley, Surrey CR2 4JB.

AGRILUS ANGUSTULUS ILL. & SCOLYTUS INTRICATUS RATZ. (COL.) IN S. E. LONDON. — The only records I have seen of these two beetles in the immediate environs of London, at all events on the south-east side, are those of William West round about the turn of the century: Shooters Hill and Abbey Wood for the *Agrilus*, Lewisham for the *Scolytus**. I had myself found them nowhere nearer than Darenth and Farningham Woods, some 10-12 miles to the east. It may, therefore, be worth noting the occurrence of both species during the past summer (1983) in the woods fringing Eltham Common at the foot of Shooters Hill; the Buprestid swept under oaks (a few examples), the Scolytid as usual infesting the thin bark of an oak bough lately broken from the parent tree — in some plenty with a few still in the pupal stage (1.vii). The VCH list for Kent (Fowler, 1909) notes *A. angustulus*, like the closely similar *A. laticornis* Ill., as very local, with only Darenth Wood given for these two species, but I have taken both at Blean and Ham Street and would expect one or the other to occur in almost any Kentish wood. *S. intricatus* is given as rare in the county, the sole localities listed there for it being Darenth Wood (again!) and Cobham Park. — A. A. ALLEN.

*Fowler (1891, *Col. Brit. Isl.*, 5 : 409) includes for this species two old suburban records, Forest Hill and Dulwich.

SAWFLY FAUNA OF A WOODED PARK WITHIN THE CITY OF EDINBURGH (Hymenoptera Symphyta)

By A. D. LISTON*

Introduction

From the spring of 1977 till the autumn of 1981, I lived very close to Corstorphine Hill (NT 2073), an area of wooded, public parkland in the north-western part of urban Edinburgh. Though not at first sight a promising locality in which to collect sawflies, my persistence finally rewarded me with the discovery of a number of interesting and local species, and produced a respectably large species list. Collecting involved sweeping and specific searching for adults and larvae. Determinations were made mostly from Benson (1951-1958).

In 1979, 1980 and 1981 I collected on Corstorphine Hill from early April till late August, on at least every second day except in the worst weather. Three visits were made in the spring of 1982. No collecting has been done in mid July.

Although I have published records of the rarer species elsewhere, the complete list is interesting in that it represents what I hope is the greater part of an evidently rather unusual local fauna, the composition of which has been greatly influenced by man. Most previously published faunistic work dealing with British Symphyta has concerned itself with larger areas and has been published in the form of county lists. Little information is available on areas of the limited size dealt with here. Whilst regional lists are of great interest, more detailed studies of smaller areas can reveal different aspects of the distribution and habitat requirements of a group of insects.

Description of surveyed area

The parkland area of Corstorphine Hill has an area of about 1.5km². This includes fields for grazing and areas of mown grass provided for general recreation, but does not include the Edinburgh Zoological Gardens nor the private golf course, which were not investigated. The hill rises gently to a maximum altitude of 530ft. (160m.) above sea-level. Local geology is uncomplicated: the survey area lies on a much eroded volcanic plug of dolerite. Soil is thin on parts of the hill's summit and the markedly striated rock exposed.

On all sides of the park there are residential areas, mostly with gardens. These areas are "smoke controlled", ie. only smoke-

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less fuels may be burned. This at least limits the amount of carbon deposited on leaves. No effects of pollution are obvious: greater problems seem to be erosion caused by the large number of pedestrians, and more seriously, damage to trees caused by non-accidental fires. Dutch Elm disease has killed a large number of hosts in recent years.

The larger area of Corstorphine Hill is dominated by amenity woodland planted in the 18th and 19th centuries. This contains large numbers of Lime (*Tilia*), Beech (*Fagus sylvatica*), Sessile and pedunculate Oaks (*Quercus*), Elms (*Ulmus*), Sycamore (*Acer pseudoplatanus*), Ash (*Fraxinus excelsior*), and smaller numbers of many others. On the western side there is a completely neglected walled garden, overgrown with Raspberry (*Rubus idaeus*), Bramble (*R. fruticosus*), Broad-leaved Dock (*Rumex obtusifolius*), Umbelliferae and Gramineae. Above this is an area of long derelict meadow dominated by sizeable trees and bushes of Hawthorn (*Crataegus*) with a few young Rowans (*Sorbus aucuparia*), Silver Birch (*Betula pendula*), Larch (*Larix*) and Cherry (*Prunus padus*). Along the length of the relatively broad top of the hill are several areas where the soil is too thin for the larger tree species. Several groups of Scots Pine (*Pinus sylvestris*), Silver Birch, and Willows (*Salix caprea* and *S. atrocinerea*) are to be found here. One stand of Alder (*Alnus glutinosa*) grows where a spring reaches surface. In separate localities there are even a very few plants of Blaeberry (*Vaccinium myrtillus*) and Hazel (*Corylus avellana*). Plants such as these are presumably the last indicators of the plant communities existing before broad-leaved trees were extensively planted. Probably Corstorphine Hill was originally dominated by Oak, with a little Willow, Birch and Hazel.

Other plants range from vetches, plantains, hawkweeds and buttercups in the open grassy areas to Rosebay willow-herb, *Samolus*, a variety of ferns, and the aliens Japanese Knotweed and *Rhododendron* in the more shady parts. Between the zoological gardens and the golf course is found the only extensive area of unmanaged grassland, on part of which is an isolated wet flush no more than 10m², in which grow Soft Rush (*Juncus effusus*) and Cuckoo Flower (*Cardamine pratensis*). Round this have seeded many young trees of Grey Poplar (*Populus canescens*).

Older conifers are not frequent, apart from Scots Pine, but a number of young Larch, (*Larix*), Spruce (*Picea*) and Hemlock (*Tsuga*) has recently been planted.

List of Species

A = Adults

L = Adults reared from Larvae

LM = Leaf-Mines

Nomenclature follows Benson (1951-1958), except where names are preceded by an asterisk

SPECIES	NUMBERS OF SPECIMENS				KNOWN OR PROBABLE LOCAL HOSTPLANT(S)
	1	2-5	5-10	10	
<i>Xyela julii</i> (Breb.)				A	<i>Pinus sylvestris</i> L.
<i>Pamphilius hortorum</i> (Kl.)		A			<i>Rubus idaeus</i> L.
<i>P. sylvaticus</i> (L.)	A				Polyphagous: shrubs & trees
<i>Calameuta pallipes</i> (Kl.)		A			?
<i>Heptamelus ochroleucus</i> (Steph.)	A				Ferns
<i>Strombocerus delicatulus</i> (Fall.)				A	Ferns
<i>Strongylogaster macula</i> (Kl.)	A				Ferns
<i>Birka cinereipes</i> (F.)	A				<i>Myosotis</i>
<i>Dolerus liogaster</i> Thom.			A		Gramineae
<i>D. gonager</i> F.				A	Gramineae
<i>D. asper</i> Zdd.		A			Gramineae
<i>D. nitens</i> Zdd.			A		Gramineae?
<i>D. possilensis</i> Cam.	A				Gramineae?
<i>D. niger</i> L.		A			Gramineae
<i>D. aeneus</i> Htg.				A	Gramineae
<i>D. sanguinicollis</i> Kl.		A			Gramineae
<i>D. picipes</i> Kl.		A			Gramineae
<i>D. nigratus</i> Mull.		A			Gramineae
<i>Heterarthrus aceris</i> (Kalt.)	A			LM	<i>Acer pseudoplatanus</i> L.
<i>H. nemoratus</i> (Fall.)		A			<i>Betula</i>
<i>Athalia glabricollis</i> Thom.	A				Cruciferae
<i>A. cordata</i> Lep.		A			Labiatae
<i>A. liberta</i> (Kl.)	A				Cruciferae
<i>Empria tridens</i> (Knw.)		A			<i>Rubus idaeus</i> L.
<i>Caliroa cerasi</i> (L.)		A			Polyphagous: trees & shrubs
<i>Eutomostethus luteiventris</i> (Kl.)		A			<i>Juncus effusus</i> L.
<i>Monophadnus pallescens</i> (Gmel.)		A			<i>Ranunculus</i>
<i>Ardis brunniventris</i> (Htg.)	A				<i>Rosa</i>

<i>Blennocampa pusilla</i> (Kl.)				A	<i>Rosa</i>
<i>Parna tenella</i> (Kl.)				LM	<i>Tilia</i>
<i>Scolioneura betuleti</i> (Kl.)		A			<i>Betula</i>
<i>Messa glaucopsis</i> (Knw.)		A	LM		<i>Populus canescens</i> (Ait.) Sm.
<i>Fenusa ulmi</i> Sund.		A			<i>Ulmus</i>
<i>F. dohrnii</i> (Tisch.)	A				<i>Alnus</i>
<i>Aglaostigma aucupariae</i> (Kl.)				A	<i>Galium</i>
<i>A. fulvipes</i> (Scop.)			A		<i>Galium</i>
<i>Tenthredopsis litterata</i> (Geoff.)			A		Gramineae
<i>T. nassata</i> (L.)				A	Gramineae
<i>Rhogogaster punctulata</i> (Kl.)		A			Polyphagous: trees & <i>Rubus</i>
<i>Tenthredo maculata</i> Geoff.		A			Gramineae
<i>T. livida</i> L.				A	highly Polyphagous
<i>T. balteata</i> Kl.	A				Polyphagous?: <i>Hypericum</i> & <i>Pteridium</i>
<i>T. colon</i> Kl.				A	highly Polyphagous
<i>T. obsoleta</i> Kl.	A				Polyphagous: herbaceous plants
<i>T. mesomelas</i> L.				A	Polyphagous: herbaceous plants
<i>Pachyprotasis rapae</i> (L.)		A			highly Polyphagous
* <i>Priophorus morio</i> (Lep.)	A				<i>Rubus idaeus</i> L.
<i>P. pallipes</i> (Lep.)		A			Polyphagous: mainly <i>Betula</i>
* <i>P. rufipes</i> (Lep.)	A				<i>Ulmus</i>
<i>Hoplocampa alpina</i> (Zett.)			A		<i>Sorbus aucuparia</i> L.
<i>H. pectoralis</i> Thom.		A			<i>Crataegus</i>
<i>H. chrysorrhoea</i> (Kl.)			A		<i>Prunus padus</i> ?
<i>Hemichroa australis</i> (Lep.)	A				<i>Betula</i>
<i>Platycampus luridiventris</i> (Fall.)		A			<i>Betula</i>
<i>Dineura virididorsata</i> (Retz.)				A	<i>Betula</i>
<i>D. stilata</i> (Kl.)		A			<i>Crataegus</i>

<i>D. testaceipes</i> (Kl.)		A			<i>Sorbus aucuparia</i> L.
<i>Pseudodineura fuscula</i> (Kl.)		A			<i>Ranunculus</i>
<i>Pristiphora pallipes</i> (Lep.)		A			<i>Ribes</i>
<i>P. ruficornis</i> (Ol.)		A			<i>Betula</i>
<i>P. laricis</i> (Htg.)				A	<i>Larix</i>
<i>P. demodata</i> Knw.		A			<i>Sorbus aucuparia</i> L. or <i>Rubus idaeus</i> L.?
* <i>P. lanifica</i> (Zdd.)		A			<i>Salix caprea</i> L.
<i>P. wesmaeli</i> (Tisch.)	A				<i>Larix</i>
* <i>Sharliphora amphibola</i> (Forst)		A			<i>Picea</i>
<i>Amauronematus amplus</i> Knw.	L				<i>Betula</i>
<i>A. humeralis</i> (Lep.)		A			<i>Salix atrocinerea</i> Brot.
<i>Nematus luteus</i> (Pzr.)	A				<i>Alnus</i>
<i>Euura mucronata</i> (Htg.)				A	<i>Salix atrocinerea</i> Brot. & <i>caprea</i> L.
* <i>Phyllocolpa leucosticta</i> (Htg.)				A	<i>Salix atrocinerea</i> Brot.
<i>Pontania bridgmanii</i> (Cam.)				A	<i>Salix atrocinerea</i> Brot. & <i>caprea</i> L.
<i>P. proxima</i> (Lep.)		L	A		<i>Salix alba</i> L.
<i>Croesus septentrionalis</i> (L.)		L			<i>Alnus</i>
<i>Nematus lucidus</i> (Pzr.)			A		<i>Crataegus</i>
<i>N. leucotrochus</i> Htg.	A				<i>Ribes uva-crispa</i> L.
<i>N. myosotidis</i> Fall.		A			<i>Trifolium</i> & <i>Onobrychis</i>
<i>N. viridescens</i> Cam.		A			<i>Betula</i>
<i>N. melanaspis</i> Htg.		A			<i>Salix</i> & <i>Betula</i>
<i>N. bergmanni</i> Dahl.		A			<i>Salix</i>
<i>N. viridis</i> Steph.	A				<i>Betula</i>
<i>N. oligospilus</i> Forst.		A			<i>Salix</i>
<i>Pachynematus scutellatus</i> (Htg.)				A	<i>Picea</i>
<i>P. montanus</i> (Zdd. & Br.)		A			<i>Picea</i>
<i>P. obductus</i> (Htg.)	A				Gramineae
<i>P. rumicis</i> (L.)	A				<i>Rumex</i>
<i>P. moerens</i> (Forst.)		A			Gramineae
<i>P. apicalis</i> (Htg.)		A			Gramineae
<i>P. clitellatus</i> (Lep.)		A			Gramineae

(To be continued)

THE FEEDING HABITS OF OVERWINTERING
LARVAE OF *ETAINIA SPHENDAMNI*
(HERING, 1937) (LEP.: NEPTICULIDAE)

By A. M. EMMET*

From the middle of the nineteenth century when *Etainia sericopeza* (Zeller) and *E. sphendamni* (Hering) were regarded as a single species under the former name, the two generations of larvae that fed in the keys of maple in May-June and July-August were well known. Mystery, however, surrounded a third generation which appeared on the trunks of the host tree in April and there spun their cocoons. Wocke (1871) seems to have been the first to suggest that these larvae had fed in the keys in the autumn and then overwintered in hibernacula. This theory was widely accepted. Trägårdh (1913, English summary) wrote, "All investigators agree that the larvae hibernate and to all appearance not in the definitive cocoons but in temporary ones; where the hibernation takes place is, however, not known". Ford (1949), and Emmet (1976b) for *E. sphendamni*, concurred with this view.

Hering (1937) recognised that there were two species and that *E. sericopeza* was host-specific to Norway maple (*Acer platanoides*) and the newly named *E. sphendamni* to field maple (*A. campestre*). Jäckh (1951) gave the first description of the winter-feeding larvae of the former species, stating that they mined successively the base of a leaf-stalk, the bark of a twig and a developing flower-bud. When Paul Johnson and I made the first British record of *E. sericopeza sensu stricto*, we redescribed the life history of the winter-feeding generation from our own observations (Emmet & Johnson, 1977). We also made the following statement: "We think it likely that the full life histories of *E. sphendamni* and *E. decentella* are not yet known. The current doctrine, repeated by authors for over a century though apparently without positive evidence, is that the larvae which spin cocoons on the trunks in the spring mined the samaras in the previous autumn, and overwintered up the tree in hibernacula. On the analogy of *E. sericopeza*, it seems to us more likely that these species, likewise, have an overwintering generation of larvae feeding in the buds or some other part of their host tree; the larvae come down to pupate immediately on quitting their feeding place. Here is an interesting field for future research".

Accordingly, in April, 1978 I studied a local colony of *E. sphendamni*, looking for larvae feeding in a similar manner to those of *E. sericopeza*, but met with a complete lack of success; there were no discoloured or aborted buds containing either larvae or tell-tale frass. After this failure I abandoned the quest but not my opinion.

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I wrote in *The Field Guide* under this species "The life history of the winter generation of larvae is imperfectly known" (Emmet, 1979).

The discovery of an exceptionally populous colony of *E. sphendarni* at Chigborough Lakes Nature Reserve near Maldon, Essex (Emmet, 1983) prompted a renewed attempt. My wife and I had planned to visit the reserve on the 11th of April but postponed the journey on finding that the maple buds round our home in Saffron Walden had not yet started to swell as a result of the exceptionally cold spring. We considered that lack of difference between mined and therefore aborted buds and those that were healthy and expanding would make the detection of larvae too difficult. With hindsight we can see that this apparently sound reasoning was the cause of our failure in 1978. When we did go on the 20th of April, we were accompanied by Dr. John Langmaid who played a key role in solving the mystery.

We spent about 20 minutes searching for discoloured or aborted buds without finding any positive evidence of larval feeding. However, many of the buds were missing, leaving only the scars to show where they had dropped off. On some twigs as many as seven out of nine buds had gone, on others three or four and on others again all were present. The uneven incidence of this damage suggested larval feeding rather than weather as the cause but there was no proof that this was the case. Further defeat was looming when JL noticed a nepticulid larva suspended from a twig by a silken thread; one of the buds on this twig had an exit-hole at its base. The bud broke off at a touch and was seen to be full of frass. We found no more larvae whilst still in the field but a twig in a handful which we brought home bore a bud which proved to be tenanted by a second larva. Significantly, there was no outward evidence of the feeding. The first larva had been placed in a glass tube. Other commitments prevented examination before the next morning, when it was found to have completed its cocoon. The second larva fed on for a further 48 hours before spinning up. We were probably a fortnight too late for the majority of the larvae.

Our research has confirmed that *E. sphendarni* has an overwintering generation of larvae feeding in the buds of field maple in much the same manner as *E. sericopeza* on Norway maple. There are, however, significant differences. Norway maple comes into leaf and flower earlier than field maple. The larvae of *E. sericopeza* feed in the flower buds, aborting them and thereby rendering them conspicuous. The mined bud does not fall and is often chosen as the site for pupation. In spite of the difference in the timing of the vegetative development of the two species of maple, *E. sphendarni* seems to feed earlier. It shows no preference for flower buds and completes its growth in the still dormant buds. Each larva needs several of these very small buds and apparently passes exter-

nally from one to another, since there is no gallery in the twig. *E. sericopeza* is likewise capable of free transition between buds (Emmet & Johnson, *loc. cit.*), but this will happen less often since the buds of Norway maple are so much larger. *Etainia* appears to be the only European genus of the Nepticulidae with larvae capable of such external movement. On field maple the buds fall soon after they have been vacated, taking with them all evidence of larval feeding; this explains why 112 years elapsed before the problem posed by Wocke was solved. When a larva enters a new bud, its period of tenancy is short: it has moved on and the bud has dropped before any colour change takes place. It is unlikely that *E. sphen-damni* ever spins its cocoon on the mined bud; if it did so, the cocoon would fall with the bud and be lost to the collector.

In all three species of *Etainia* many of the larvae descend to the ground by a silken thread and spin up where they drop. If a larva has fed high up, when it descends to pupate it may get blown against a trunk and it is then that the spinning takes place on that surface. The larva found hanging at Chigborough Lakes was placed in a dry glass tube without any vegetable matter. Its cocoon was pure white and remained so for a week. Then I placed a fresh young hawthorn leaf in the tube and when I looked again after two hours the cocoon had already turned dark brown. The other larva was in a plastic box containing twigs and buds and its cocoon was brown when first observed. A similar colour change was observed in the cocoons of *E. sericopeza* (Emmet & Johnson, *loc. cit.*) and in the larval case of *Coleophora tamesis* Waters (Emmet, 1970a). I am not aware that any study has been made of this reaction. The period spent in the cocoon (prepupa + pupa) was 20 days.

Our knowledge of the overwintering generation of *E. sphen-damni* is still incomplete. It is possible that some larvae feed up during autumn in the keys, over-winter as pupae and emerge in spring simultaneously with the adults from the bud-feeding larvae. Warren (1881) observed oviposition taking place in mid-September on keys that were still green. Trägårdh (*loc. cit.*, English summary) wrote, "Larvae were found as late as 17-19 October and at the same time pupae, some of which were obtained from cocoons on leaves already fallen to the ground. It can consequently be no doubt that at least some hybernate in definitive cocoons which are spun on the leaves and with these drop to the ground" [*sic.*]. It would be interesting to know whether these autumn larvae belong to the same generation as those which will feed in the buds early in the following spring.

Reference has already been made to Jäckh's statement that the winter larvae of *E. sericopeza* mine petioles and bark before entering the buds. Paul Johnson and I failed to find any evidence of this, either through defective observation or because such feeding

is not obligatory and did not occur in the colony we were studying. It is possible that the winter larvae of *E. sphendamni* are part-fed before they enter the buds. If so, where did the earlier feeding take place? It could have been in the samaras.

The question arises of the feeding of the early generation of *E. decentella* (Herrich-Schäffer) which also has larvae which spin their cocoons on trunks in spring. Almost certainly they have fed in a manner similar to the related species. *E. decentella* feeds on sycamore (*A. pseudoplatanus*). Obviously the tree must be sufficiently mature to bear fruit for the summer generations to feed on; this means that it is tall and almost all branches are out of reach, rendering searching difficult. However, Johnson (1982) found a sycamore with low shoots bearing buds which had been mined, in all probability by *E. decentella*.

There may also be implications for other nepticulid species having their life histories still unknown. *Bohemannia* Stainton and *Etainia* Beirne are now placed next to each other (Bradley & Fletcher, 1979) because of the morphological similarities of the adults. There may also be resemblances in larval behaviour. *Bohemannia quadrimaculella* (Boheman) has always been associated with alder (*Alnus glutinosa*) and is not uncommon; nevertheless, its life history remains stubbornly undescribed. I once beat a pair *in cop.* from a branch of alder. Thinking that mating might be taking place before the female had flown, I searched for signs of larval feeding and found a bud which had been mined (Emmet, 1970b). At that time I knew nothing about the winter-feeding habits of *Etainia* and the concept of a nepticulid mining a bud was too novel to be readily acceptable. Now I feel with much more confidence that the mine I found was the work of *B. quadrimaculella*.

Ectoedemia bradfordi Emmet is known only from two specimens, one from the type locality in Kent and the other from Holland. Van Nieukerken (1982) suggests that it belongs to *Bohemannia* rather than *Ectoedemia* and may be a shoot-, bark- or bud-miner. Its apparent rarity may be due to our ignorance of its life history. The first specimen was taken on a leaf of wild service-tree (*Sorbus torminalis*) but this cannot be the foodplant as it does not occur in Holland.

Trifurcula pallidella Zeller has long been associated with dyer's greenweed (*Genista tinctoria*), in all probability correctly. Banks had a colony near his home in Dorset and repeatedly looked for the mine (unpublished diary in British Museum (Natural History)). My search for it in the bark resulted in the discovery that *Leucopetera spartifoliella* (Hubner) (Lyonetiidae) mines in the bark of this foodplant as well as of broom (*Sarothamnus scoparius*) (Emmet, 1976a). If the larva of *T. pallidella* is a bud-miner and the vacated

buds fall as easily as those mined by *E. sphendamni* do from field maple, it would be just as elusive as the winter-feeding larva of the latter species.

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Notes and Observations

THE BROWN-TAIL MOTH: *EUPROCTIS CHRYSORRHOEA* L. IN BUCKINGHAM PALACE GARDEN. — The sporadic westward incursions of the Brown-tail from the Thames estuary into London in recent years reached a significant magnitude in July 1983 when more than 30 specimens were recorded in the m.v. light trap in the grounds of Buckingham Palace. The majority were found in the trap on 13th July, when Mr. Fred Kemp (Deputy Head Gardener) and I counted at least 24 in the trap and noted one or two outside (specimens examined proved to be males). Also in the trap were two specimens of the White Satin Moth (*Leucoma salicis* L.).

Moth trapping has been continued annually in the palace grounds for the past 23 years, since June 1960. An initial report on the Lepidoptera appeared in *The Natural History of the Garden of Buckingham Palace* published in 1964 as part of the *Proceedings and Transactions of the British Entomological & Natural History Society*, and was followed in 1966 by an account of further records and observations made in 1964-65. At that time the Brown-tail had not been observed in the palace garden, and it was not until 1967 that the first moths appeared, three being found in the trap on 14th July and a singleton in early August. Brown-tails were not seen again until nine years later, when four were trapped in July 1976. Other records were in August 1978 (3) July 1981 (1) and July 1982 (4 or 5). During the first week of July 1983, 8 moths appeared in the trap, and these were followed a week later by the major cumulative catch of 25-30 trapped over 3 consecutive nights preceding the 13th July. Since then no Brown-tails have appeared in the trap up to 8th August. — J. D. BRADLEY.

UNUSUAL ABUNDANCE OF *INACHIS IO* L. — On August 6th 1983, this butterfly was in bigger numbers than I ever remember. Above Soar Mill Cove near Salcombe, S. Devon, there is a patch of buddleia roughly four to five yards square, the flowers of which were groaning under the weight of *I. io*. It was difficult to make an accurate count because of the constant movement, but three different attempts produced 71, 78 and 82, all in mint condition. — R. LOVELL-PANK, 33 The Highlands, Hatfield Road, Potters Bar, Herts.

COSMIA TRAPEZINA L. LARVAE FEEDING ON APPLE BLOSSOM. — In early May 1983 I found a number of small Noctuid larvae characterized by black legs inside apple blossom in my Dartford garden. I was unable to identify them until they were about half-grown when they were seen to be *trapezina*, later confirmed when moths emerged. In the meantime they had been supplied with young leaves and blossom of apple, but leaves, petals and calyx remained largely untouched, only the stamens and stigma of each flower being eaten, until blossom was no longer readily available and leaves

only were provided, and these were then readily consumed. This behaviour, which I have not seen noted elsewhere, no doubt provided benefit to the young caterpillars in relative security from predators and a good chance of encountering young larvae of other species, e.g. *Operophtera brumata* L. and *Chloroclystis rectangulata* L. upon which to prey. — B. K. WEST, 36 Brair Road, Bexley, Kent.

MARUCA TESTULALIS GEYER IN SURREY. — I took a single specimen of this striking pyale at light here on the 29 July 1983. The determination was confirmed by the editor. — Sir JOHN DACIE, 10 Alan Road, Wimbledon, SW19.

MARUCA TESTULALIS GEYER (LEP.: PYRALIDAE) IN CORNWALL. — Since publishing the occurrence of *Thaumetopoea processionea* L. in Cornwall (*Ent. Rec.*, **95**: 216), a specimen of another rare immigrant taken the same week has been identified as *Maruca testulalis* Geyer. This individual was captured on the night of 15/16 August 1983 at Mawnan Smith at m.v. light. *M. testulalis* was added to the British list by Chalmers-Hunt in 1968 (*Ent. Rec.*, **80**:242, figured), when two larvae were successfully bred out by Dr. G. Dicker at East Malling Research Station. The first imago taken in this country was at Wanstead Park, Essex in 1979 by Mr. C. Plant (see de Worms, *Ent. Rec.*, **91**: 286). I thank Rev. D. Agassiz for identifying my specimen. — A. P. FOSTER, c/o The Nature Conservancy Council, 19-20 Belgrave Square, London SW1X 8PY.

BEHAVIOUR OF LARVAE OF THE GYPSY MOTH: LYMANTRIA DISPAR L. — Whilst working in Italy in June 1983, I visited the home of a colleague, Dr. Carlo Matessi, in the village of Cascina, just south of Pavia. He had mentioned that he had seen several hairy caterpillars on the trunk of a large walnut tree in his garden. I immediately thought these would be of one of the footman moths. However, on examining the tree trunk I was surprised to discover that the larvae were not Arctiids at all, but rather Lymantrids, for I recognised an old friend, the Gypsy Moth, *Lymantria dispar*. I counted well over fifty larvae hidden between the cracks in the bark of the trunk. Most were in the 4th or 5th instars, but there were a few still in the earlier instars. I also found four of the buff coloured oval masses, all empty, so presumably these were the source of the larvae.

The intriguing aspect was the behaviour of the larvae. They remained motionless in their hiding places during the day and then at dusk started to move on the trunk, generally seeming to move upwards. By the time we rose the following morning the larvae had returned to their hiding places. Oddly the leaves of the walnut tree were not eaten at all. There were no other signs of *L. dispar* larvae elsewhere in the garden and no other potential foodplant close to the walnut tree. I suspect therefore that the larvae may have been "grazing" on algae or lichens growing on the trunk. This

suspicion was slightly reinforced about a week later when I visited the Certosa di Pavia, a beautiful 14th century monastery just outside Pavia. The Certosa is approached along an avenue of lime trees. Many of these trees also had *L. dispar* larvae on the trunks, and again there was no evidence that they were eating the foliage. Other *L. dispar* larvae were seen near the Certosa on the trunks of poplars which are grown in plantations on an extensive scale as a timber crop in this part of Italy.

As a side note, it was very notable that the larvae were extremely variable in colour, ranging from pale grey, through various brownish or bluish grey shades, to a dark sooty almost black form. Most were more or less uniform in their ground colour, but some of the mid-grey forms had a sooty black stripe along the back. I had bred this species in Britain from imported stock before, but have never noticed this degree of variation before.

If anyone has any comments on either the behaviour of the larvae or their colour variation I would be most interested, particularly if anyone can either confirm my suspicion that they are grazing on lichens or algae, or offer an alternative explanation. — DR. M. MAJERUS, Department of Genetics, University of Cambridge, Downing Street, Cambridge CB2 3EH.

HEODES TITYRUS PODA. (THE SOOTY COPPER) IN SUSSEX: A DOUBTFUL RECORD. — Mr. C. Nixon gave me a female specimen of this species reported (*Ent. Record* 1960, vol. 72, p.263; see also p.251) to have been caught by him at Seaford, Sussex in August 1958. This specimen appears referable to ssp. *tityrus*, and the butterfly is described in Howarth, *South's British Butterflies* p.72, as being introduced or of accidental occurrence, having been recorded in Britain only once before, in Devon in 1887. Nixon told me, however, that he is by no means certain that he caught it at Seaford, and more than likely mixed it up with other butterflies he took in Interlaken, Switzerland in 1955 (which also did not bear his own labels). — D. C. LEES, 74 Woodcrest Road, Purley, Surrey CR2 4JB.

APOROPHYLA LUTULENTA D. & S. (DEEP-BROWN DART), LARVA FEEDING ON RANUNCULUS ACRIS L. FLOWERS. — On 8th May, 1983, I collected a single larva of a nearly full-fed Noctuid which proved to be *Aporophyla lutulenta*. It was at rest, head downwards during daylight, on a vertical stem of *Ranunculus acris*, the meadow buttercup, in a field near Aveley, Essex, (O.S. ref. TQ 573821). The petals on the flowers of this particular plant had been partly eaten, and with the permission of the landowner, the entire plant was transplanted to my own garden. The larva continued to feed on the flowers preferring the petals, but when these became un-available it ate the entire flower head of recently opened buds, but always avoiding the sepals. Pupation took place on 14th May, and the moth, a male, emerged on 22nd September, 1983.

The normal foodplants of this species are various grasses, yarrow, groundsel, dock, plantain, gromwell and other low herbage. The only reference to eating flowers relates to buds of hawthorn and blackthorn in the spring — C. W. PLANT, Assistant Curator, Natural Sciences (Biology). Passmore Edwards Museum, Romford Road, Stratford, E15 4LZ.

A SECOND YORKSHIRE RECORD OF *AGONUM GRACILIPES* (DUFT.) (COL.: CARABIDAE). — Mr. D. R. Nash (1983, *Entomologist's Rec. J. Var.* 95: 205-206) raises again the question of the authenticity of the Yorkshire record of *Agonum gracilipes* (Duft.) at Hornsea and, not surprisingly, is unaware of a second Yorkshire record which was published in *The entomology of the Spurn Peninsula*, part 8, *Coleoptera, Carabidae* by S. Shaw (1952, *Naturalist*, 170-173). Yorkshire entomologists for a hundred years have made a habit of publishing most of their records in the *Naturalist*. On June 22nd, 1951, I took a single example of this beetle on the Warren, an area of consolidated dune turf at the northern end of Spurn. I left Spurn on the next day but Messrs. W. D. Hincks, S. Shaw and W. O. Steel searched the area diligently during the two following days and found no further examples. The single specimen is in my collection. Bissill's Hornsea specimen was apparently lost in the post but this second occurrence strengthens the case for its probable accuracy while not affecting Mr. Nash's case on the status of the species in Britain. — J. H. FLINT, 7 Norfolk Mount, Leeds LS7 4PU.

THE RED ADMIRAL: *VANESSA ATALANTA* L. AUTUMN OVIPOSITING. — In 1983, on the 22 October, I watched this butterfly laying repeatedly on luxuriant nettles during the middle of a sunny day in cold easterly wind with a shade temperature of 54°F; and, several miles away on the 7 November, during mild southerly winds several ova deposited on young nettles. — A. ARCHER-LOCK, 4, Glenwood Road, Mannamead, Plymouth.

CASSIDA VIRIDIS L. (COL.: CHRYSOMELIDAE) IN WEST CUMBRIA. — Although this chrysomelid is, according to the records, well distributed in Britain and quite common, there appear to be very few records of its occurrence in Cumbria. The only record given by F. H. Day in his county list of Cumberland Coleoptera, (1923, *Trans. Carlisle nat. Hist. Soc.* 3: 95) is based on an old one from Rickerby Park, Carlisle, (NY45) by T. C. Heysham; this particular record being now well over one hundred years old.

During the past two years I have found *C. viridis* in two localities in West Cumbria. My first site being the River Irt above Gaterigghow Bridge, (NY11.04) where on the 7th September, 1981 I tapped several individuals from *Stachys sylvatica* L. (Hedge Woundwort) growing among loose gravel near the river bank; lower down the river on the same day, I found some more specimens, this time on *Mentha aquatica* L. growing in a damp situation by the side

of a small tributary stream. On the 30th August, 1983 while doing some general sweeping by the edge of Beacon Plantation, near Ravenglass, (SD09.94) I found *C. viridis* in large numbers feeding and resting on the leaves of *S. sylvatica* in a damp situation near to some alder trees. Altogether some twenty individuals were counted on about six separate plants, and a number of larvae were seen feeding on the leaves where they made large irregular holes in between the main leaf veins. R. W. J. READ, 43 Holly Terrace, Hensingham, Whitehaven, Cumbria, CA28 8RF.

COLEOPHORA OCHREA HAW. AND EPISCHNIA BANKESIELLA RICH. IN SOUTH WALES. — Whilst on an entomological foray to the Gower Peninsula in May 1983 with M. W. Harper, we were lucky enough to find a single case of *Coleophora ochrea* on *Helianthemum* which I unfortunately failed to rear. Also there were a number of larvae in silk tubes on *Inula crithmoides* from which were reared *Epischnia banksiella*. I believe both may be new Welsh records and that the latter may not have been taken out of the Dorset area before. — Dr. A. N. B. SIMPSON, 29 Greenway, Colletts Green, Powick, Worcester.

FYLDE MOTH RECORDS. — We are endeavouring to compile a full record of the moths occurring in the Fylde area of West Lancashire (i.e., an area lying west of the M6 motorway from Preston in the south to about Lancaster in the north). We intend to give an indication of the present (and past) distribution of such species. We shall be grateful if any readers can help us with relevant information to augment our own records. Information on species recorded or collected in the Fylde, with dates and sites, or details of collections containing specimens from this area will be very welcome. Any postal or other expenses incurred will of course be refunded. — C. F. and N. J. STEEDEN, 2 Brighton Avenue, Lytham, St. Annes, Lancashire FY81XQ.

TWO INLAND RECORDS OF PHILOPEDON PLAGIATUS (SCHALLER) (COL.: CURCULIONIDAE). — *Philopedon plagiatus* (Schaller) is well known to be a characteristic species of sand dune habitats, and is nearly always found on the coast, usually in very large numbers. To my knowledge few records of its occurrence from inland situations have appeared in the literature, and it is for this reason that I should like to record here the presence of this species at two inland sites in West Cumbria. I found two specimens crawling over a low grassy bank by the edge of a field near St. Michaels Church at Irton, (NY09.00) on the 23rd June, 1979. This site is approximately seven kilometers from the coast, and the nearest sand dunes are at the Ravenglass Reserve near Drigg. It is possible that the weevils may have strayed from a nearby sand pit which is disused and lies to the south east of the church near Parsonage Farm. My second site was near Panope, Seascale, (NY05.01), where on the 10th May, 1980 I found one individual together with a few speci-

mens of *Strophosomus melanogrammus* (Forster) on the ground at the base of some young plants of Sheeps Sorrel; which were growing on very sandy soil by the side of an old cart track. This second site is about three kilometers from the sea.

Perhaps *P. plagiatus* is well established at these two sites and it would be interesting to discover what it feeds on in inland situations. The weevil is normally associated with Marram Grass, but may well be a more general feeder, at least in the adult stage. I have found the weevil on a number of occasions on the shore between Seascale and Ravenglass on the following plants: Sheeps Sorrel and Common Sorrel, Creeping Thistle, Curled Dock and Sea Mayweed. Hoffmann, (1950, *Faune De France.*, 52 (Coleopteres Curculionides, 1: 376) mentions that in France *P. plagiatus* appears to be polyphagous and has been found feeding on the leaves of Broom, (*Sarothamnus scoparius*) and is sometimes a pest of vines. — R. W. J. READ, 43 Holly Terrace, Hensingham, Whitehaven, Cumbria, CA28 8RF.

THE PAPERS AND ENTOMOLOGICAL COLLECTIONS OF CHARLES P. ALEXANDER (1889-1981) AT THE SMITHSONIAN INSTITUTION. — Dipterists will wish to know that the materials of this legendary student of the Tipulidae have been acquired by the Smithsonian Institution. In his lengthy and informative 1982 obituary, George W. Byers suggested that "when Alexander began his work on the crane flies, there were perhaps 1500 species known world-wide. The species he named and described constitute three-fourths of this now enormous family of 14,000 species, largest among the Diptera. It seems improbable that one man ever before so dominated the development of the taxonomy of so large a family" (*J. Kansas Entomol. Soc.* 55: 409-417). Alexander's correspondence, collecting records, research data, diaries, photographs and miscellaneous papers, which occupy 60 shelf feet, are now being organized and catalogued in the Smithsonian Archives, and a register will eventually be produced. Inquiries about these materials should be directed to the Deputy Archivist, Smithsonian Institution, Washington, D.C. 20560. Alexander's immense and authoritative collection of specimens and microscope slides was conveyed shortly before his death, and is now in the Department of Entomology, National Museum of Natural History, Smithsonian Institution. — RONALD S. WILKINSON, American Museum of Natural History, New York City, New York 10024.

ALARM RESPONSE IN LARVAE OF DIURNEA FAGELLA D. & S. — Whilst examining some small larvae which turned out to be those of *Diurnea fagella* in Worcestershire in 1983, I was surprised by their vigorous and quite complicated alarm responses. When their spinings were opened up these small larvae tended to "stand their ground" and when challenged by the apex of a pair of forceps responded by raising the head and the first two thoracic segments from the leaf and at the same time drumming vigorously with the

third pair of legs on the surface of the leaf. This produced quite a noticeably audible sound especially on a hard leaf such as oak. The text books report the third pair of legs to be inflated like "boxing gloves" in this genus, but I have not seen any comment as to the function of this feature.

On examination the terminal segment of the third pair of legs, although rounded and inflated dorsally has an anvil shaped downward projecting point with a short hard tip. This seems to be designed to be struck against the leaf during the drumming movements which are very rapid. So rapid that the third pair of legs becomes "a blurr". Although the head also is raised up aggressively towards the challenge no obvious fluid was seen escaping from the mouth. When the larvae were larger they tended to be more inclined to wriggle off backwards rather than responding by drumming but if sufficiently provoked or when cornered they also would drum quite loudly on any hard substratum such as an oak leaf or the plastic lid of a container.

I imagine this alarm response would be to deter a predator, perhaps a small bird or more probably an insect predator such as a predatory bug. Also, however, when a number of these larvae were artificially placed into a new container they could be heard rattling and drumming away whenever one of their number came too close, and certainly in captivity this seemed to keep them apart on their food plant. — Dr. A. N. B. SIMPSON, 29 Greenway, Collets Green, Powick, Worcester.

PERIDEA ANCEPS GOEZE: TREPIDA ESP. (GREAT PROMINENT) IN NOVEMBER. — On the 8th November 1983, my brother Michael and myself spent the evening near Sixpenny Handley, Dorset with the aid of a m.v. light successfully locating *Ptilophora plumigera* (Plumed Prominent). After the appearance of six *P. plumigera*, we were much surprised at the arrival on the sheet of a fresh *Peridea anceps*. — E. G. SMITH, Bullen Hill Farm, Ashton Common, Trowbridge, Wilts. [This would seem to be a case of a second generation specimen of *anceps*, though we are only aware of one other such example on record. On the 7th October 1977, Dr. H. G. Parker captured a worn male of this species near Builth Wells, Breconshire, which specimen we have seen. — EDITOR].

THE LONG-TAILED BLUE: LAMPIDES BOETICUS L. IN SOMERSET. — As recorder of lepidoptera for the Somerset Archaeological & Natural History Society, I have received the following note from Mr. L. A. Haldane of Staple Fitzpaine, Somerset: "Undoubtedly my most interesting find was *Lampides boeticus* (The Long-tailed Blue). This alighted on a leaf near me in the forestry on the Blackdowns above our house on 7th August 1983. I had a very good, close look at it, the underside is unmistakable and it is well known to me from East Africa where it is common." — B. W. MOORE, F.R.E.S., Church Cottage, Church Lane, Batheaston, Bath.

AN ANONYMOUS SIXTEENTH-CENTURY TREATISE ON LOCUSTS.

— A slender volume acquired by the Michigan State University Library from the dealer H. P. Kraus is of historical interest as a very early imprint to be concerned entirely with an entomological topic. The anonymous treatise, *Discorso sopra il nvovo apparir delle cavallette*, has a colophon dated 1 October 1542, and was printed by Francesco Rossi of Ferrara. Dedicated by the author to his patron Nicolo Vicenzi, the pamphlet was inspired by a visitation of locusts to the area.

The first section of the *Discorso* is a discussion of locust metamorphosis and behaviour, with a few comments on anatomy and some excursions, taken from Aristotle, Pliny, Albertus Magnus and more contemporary writers, but including no personal observations by the author. As may be expected in a Renaissance text, some of the content is fabulous, so that we read of the enormous locust of India ("lunghe tre piedi"), and another remarkable orthopteron which kills snakes by biting their throats. However, the compilation is not inferior to other entomological efforts made before the more critical attitude toward natural history which was developing in the sixteenth century. In the second section, an historical account of locust and other orthopteran 'plagues' from ancient times to the present is assembled from various sources. The pamphlet reflects the belief, still held in the Renaissance, that visitations of locusts were indicative of human events other than the agricultural disasters which they caused, and could be as useful as the appearance of comets and other unusual occurrences in predicting political upheavals, the death of monarchs, and sundry calamities. The final section explains how locusts can be controlled. The author suggests flooding fields to destroy eggs; the use of smoke and ditches filled with brine to combat 'plagues'; and such anti-locust specifics as oil of wormwood, extract of centaury, and bitter lupins boiled in brine. Bats may be used to ward off locusts, which will not descend to the fields if they see these enemies tethered in trees. (Was such a curious method ever actually attempted?) Locusts will also continue their flight without causing harm if residents of the area will remain indoors so that the insects *cannot* see them — an ancient Greek belief. Tithing to the Church can prevent locust visitations, and the hordes may be driven away by a traditional expedient also used in other cases of calamity, that of a figure of authority declaiming in the fields — reading the riot act, as it were.

Despite a census, no other copy of the *Discorso* has yet been located. Hopefully a more intensive survey of Italian libraries will provide additional data. The Centre for Overseas Pest Research (which maintains the bibliographical data of the former Anti-Locust Centre) has no record of the pamphlet. Are any readers of the *Record* able to identify the author? The Michigan State University copy, which collates A-B⁴, C²; 20pp., is from the library

of the legendary British bibliophile Richard Heber (1773-1833), and bears his 'Bibliotheca Heberiana' stamp. An examination of the eight volumes of catalogues of the consecutive sales of Heber's books has not revealed mention of the imprint, and I assume that it was included in one of the many groups of pamphlets sold as lots. I am grateful to Ellen B. Wells of the Smithsonian Institution, Washington, D.C. for valuable assistance in translation. — R. S. WILKINSON, 228 Ninth Street, N. E. Washington, D.C. 20002, U.S.A.

THE EARLIEST KNOWN BRITISH CAPTURE OF CRYPTOPLEURUM SUBTILE SHARP (COL.: HYDROPHILIDAE). — Among the duplicate Coleoptera left by my late friend G. H. Ashe I have detected an example of this comparative newcomer to our fauna, evidently not distinguished by him from the common *C. minutum* F., and bearing the data 'Shute Park/hedge clippings/25.ix.58'. The locality is near Colyton, S. Devon — an addition to the few counties from which the species is yet recorded — but of still more interest is the date, which is 8 years before the first published captures in Cheshire and Merionethshire in 1966 (C. Johnson, 1967, *Entom.*, **100**: 172-3). This year (23.viii.83) I have taken a specimen at m.v. light here at Charlton; there has, I think been no further published record since I obtained one in the same way at Blackheath, a mere 2½ miles distant, 16 years before (Allen, 1968, *Ent. mon. Mag.*, **104**:207). A. A. ALLEN.

RECORDS OF TWO TEPHRITIDS (DIPT.) IN E. KENT AND W. NORFOLK. — *Paroxyna loewiana* Hend.: a specimen of this local species, whose foodplant is *Solidago virgaurea* L., was swept in a clearing in the Ham Street Woods (11.vi.64) and kindly confirmed some years ago by Mr. P. J. Chandler, who informed me that it should be a new record for East Kent (V.C.15). *Tephritis formosa* Loew; one swept from *Tanacetum vulgare* L. in a field near Faversham Creek (21.viii.68); this however is not, apparently, a recognized foodplant of *T. formosa*, among which are listed species of *Hypochoeris*, *Crepis*, and *Sonchus*. Recently (4.viii.83) I swept several examples from a dense and tall cypress hedge at Foulton, Norfolk. No likely host was at hand, so probably, as the situation was rather bleak and open, the flies had been carried there from a distance on the wind and sought the hedge for shelter. I can say nothing as to the previous status of this very local species in either Kent or Norfolk; I have it also from Windsor Forest, cf. *Ent. Rec.*, **95**:24. — A. A. ALLEN.

WALDO L. MCATEE'S COLLECTION OF ENTOMOLOGICAL MANUSCRIPTS AND LABELS IN THE LIBRARY OF CONGRESS. — Extensive collections of the handwriting of entomologists are always of value to taxonomists, especially when they include some representative labels. The American naturalist Waldo Lee McAtee (1883-1962) is best remembered for his research on the food habits of verte-

brates, but much of his work was entomological (see the 1963 obituary by E. R. Kalmbach in *Auk* **80**: 474-485), and one series of his papers in the Library of Congress is a collection of entomologist's letters, manuscript fragments, and labels. Hundreds of nineteenth and twentieth-century individuals are represented. The value of McAtee's collection is in its wide spectrum; he especially attempted to find samples of the writing of workers in the less 'popular' orders, and his material is a valuable source for those who need to verify or locate such hands. This series of McAtee's papers is arranged alphabetically, and the library is able to supply photocopies at cost if provided with names. Of course, extensive photocopying requests would require personal attention which the library could not provide. A list is maintained of local persons who conduct research for a fee. Inquiries should be directed to the manuscript Division, Library of Congress, Washington, D.C. 20540. — R. S. WILKINSON, The American Museum of Natural History, New York City, New York 10024.

THE DEATH'S-HEAD HAWKMOTH: *ACHERONTIA ATROPOS* L. IN A BEEHIVE. — A specimen of this fine moth was brought to Ludlow Museum during October 1983. It had been taken from a beehive by Mrs. Moore of Aston-on-Clun, Shropshire. — W. J. NORTON, M.B.E., F.G.S., F.R.E.S., Curator, The Museum, Ludlow, Shropshire.

OCCURRENCE OF A FULLY-DEVELOPED MALE OF *HIMACERUS APTERUS* F. (HEM.: NABIDAE). — This bug was rather common on trees and shrubs in the Foulton area of Norfolk in early August 1983; as its name suggests, it is nearly always found in the undeveloped (in this instance micropterous) form. It was gratifying, therefore, to beat from a young pine in a plantation in the above district on the 7th a male with forewings reaching the end of the abdomen. Southwood & Leston (1959, *Land & Water Bugs of the British Isles*: 166) state that this condition is occasional, and more frequent in females in the ratio of about 4 to 1. The occurrence of a male would thus appear to be a somewhat notable event. — A. A. ALLEN.

THE BEDSTRAW HAWKMOTH: *HYLES GALLII* ROTT. NEAR PERTH, SCOTLAND. — On the 21st September 1983, an almost fully grown larva of this species from Roman Road, Almond-bank near Perth NGR 37/065264 was brought into the Perth Museum and Art Gallery for identification. Other records of this species from this part of Scotland would be most welcome. — M. A. TAYLOR, Keeper of Natural Sciences, Perth Museum and Art Gallery, George Street, Perth.

EPITRIX PUBESCENS KOCH (COL.: CHRYSOMELIDAE) IN W. NORFOLK. — On 6th August 1983 I swept three examples of this very local flea-beetle on a strip of fallow ground between two cultivated fields at Foulton, where amongst a great variety of 'weeds' its foodplant, *Solanum nigrum* L., grew sparsely. Fowler

(1890, *Col. Brit. Isl.*, 4: 384) notes the species as extremely local, but, since he wrote, a number of further localities have been found in E. Kent and Essex; from elsewhere, however, I have seen only scattered records. The generally impermanent nature of the black nightshade, an annual typical of disturbed soils, may result in the beetle's being more seldom seen, as a rule, than its congener *E. atropae* Foud.; whereas the latter lives on a host (*A. belladonna*) which, though of very local occurrence, is a perennial that does not move its station from year to year. — A. A. ALLEN.

BORDERED STRAW: HELIOTHIS PELTIGERA D. & S. ON THE WING IN JANUARY. — The winter of 1982-83 was particularly mild, especially in the South West of England. Nevertheless I was extremely surprised to catch a Bordered Straw when it flew in through our opened kitchen door in Sheviock, Cornwall during the evening of 26th January 1983. The specimen appeared very fresh and I suppose the very mild weather must have stimulated not only the early emergence of the insect but also facilitated successful overwintering (or very nearly so anyway) of the species. — S. C. MADGE, 2 Church Row, Sheviock, Torpoint, Cornwall PL11 3EH.

MONOPIS WEAVERELLA (SCOTT), A MYSTERY SOLVED? — Like Mr. Pelham-Clinton (*Entomologist's Rec. J. Var.* 95: 212) I also had often wondered where *Monopis weaverella* passed its larval stage. Old bird's nests sometimes contained *M. rusticella* (Huebner) larvae in quantity but never those of this closely related species. Then in July 1981, Mr. J. M. Nelson of the Nature Conservancy Council passed to me for identification a specimen of *M. weaverella* that he had reared from fox faeces collected in May of that year on Flanders Moss NR, West Perthshire. Subsequently several more imagines emerged from the same small piece of dung. The larvae had apparently fed inside the faecal material on a matted matrix of what appeared to be rabbit fur.

On the other hand a large quantity of Golden Eagle pellets collected by Dr. J. Watson (N.C.C.) in the Dubh Loch area of Wester Ross produced only *M. rusticella* and *Tinea pallescentella* Stainton — the former in considerable numbers. Some of these pellets from which moths emerged appeared, at least superficially, to have a similar composition to the fox dung from Flanders Moss. Until other reports occur, it is premature to say that the mystery has been solved but fox dung has, at least on one occasion, acted as the pabulum of the larvae of *M. weaverella*. — K. P. BLAND, 35 Charterhall Road, Edinburgh EH9 3HS.

MONOPIS WEAVERELLA (SCOTT), A SOLUTION TO THE MYSTERY — As an enthusiastic collector of unpleasant detritus, I was delighted to read the article on *Monopis weaverella* by E. C. Pelham-Clinton (*Ent. Rec.*, 95: 212), and here offer a solution to the mystery of the larval pabulum.

Whilst at Dungeness, Kent, on the 7th April 1983, I stumbled

upon a dead rabbit which at once caught my eye owing to the arrangement of the remains. The bones were spread out in text-book fashion, from cranium to tarsals, and I would have passed on had there not been a ball of apparently mangled fur near the pelvis. On closer inspection, I noticed a whitish larva crawling on the fur and at once collected up the remains. There was neither sign of other larvae, nor of portable larval cases which tineids sometimes have. At the end of April, however, several large (14-17mm) *Monoepis weaverella* emerged from the fur ball, the pupae projecting like hedgehog spines.

The forewings of these specimens were black with a deep purple iridescence, the discal and large tornal spot yellow-ochreous with the head similar, but more orange-tinged. The hindwings of the male were grey, darker posteriorly, and of the female were dark brown with a purplish iridescence.

Concerning the biology of the species, I can add little. The larvae were at least fully grown, if not pupated, by the beginning of April, which would imply they had overwintered and fed slowly in the fur and skin. Quite what condition the rabbit was in when the female *M. weaverella* laid her eggs is not at all clear, but in an effort to find out, I have since collected several rabbits in varying states of decay without success.

May I wish tineid hunters the best of luck in rearing this and, hopefully, other species from dead mammalian material, most of which, I vouch, should carry a Government Health Warning. — P. H. STERLING, Department of Agricultural & Forest Sciences, Commonwealth Forestry Institute, South Parks Road, Oxford.

Current Literature

The Empidoidea (Diptera) of Fennoscandia and Denmark. II. By M. Chvála. Fauna Entomologica Scandinavica, vol. 12, Cloth, 279 pp., 368 figs., maps, distribution tables, etc. Scandinavian Science Press, 1983. Price: 200 D.kr.

This volume continues the series on the Empid flies commenced with no. 1 on the Tachydromiinae (1973), and upholds in all respects the very high standards that we have come to expect in these publications. Though following the general arrangement of vol. I, it differs in some minor points; e.g. the figures of wings, instead of being photographs put into columns at the end for convenience of comparison, are here drawn and disposed throughout the text — often in drawings of whole flies. There is a great wealth of clear and excellent figures, a feature that cannot be too highly praised. Besides those of whole flies (one per genus), genitalia and parts of hypopygia, wings, heads, antennae and legs, a new feature of this volume is the illustration of dissected mouthparts for each genus.

The superfamily name Empidoidea in the title, instead of the family one Empididae, is explained by Dr. Chvála's taxonomic

researches which indicate that groups previously ranked as sub-families in fact require family status. Under this re-classification the Dolichopodidae appear as one of the constituent families of the Empidoidea, of equivalent status to the Empididae *sensu novo*, Atelestidae, Hybotidae, and Microphoridae. The book covers the three newly raised families last named, but this 'systematic part' is preceded by a 'general part' of some 70 pages in which the innovation is justified and the Empidoidea (other than Dolichopodidae) treated in great depth and detail, under the headings of adult morphology (richly illustrated), systematic position, the historical aspect, extinct forms, phylogeny, classification, life history (with feeding, swarming and mating habits) and zoogeography. To a non-professional, the author's grasp of his subject and the prodigious amount of close intensive study it must have entailed are little short of staggering.

As with vol. I, a very high proportion of the species dealt with are British, while the several that do not occur in the region covered but are found in Britain are at least mentioned and characterized.

Altogether this is work of the highest quality and a landmark in the study of Empid flies (a conveniently imprecise expression!), and causes one to look forward keenly to the final three volumes dealing with the rest of the Empididae as now restricted. — A. A. A. **A Silkmoth Rearer's Handbook**. Third Edition, revised and edited by B.O.C. Gardiner. Pp. xiii+255. 32 coloured, 26 other plates and 14 text illustrations. Decorated hard cover. The Amateur Entomologist Volume 12, 1982. £11 (including carriage), from AES Publications, 4 Steep Close, Green Street Green, Orpington, Kent BR6 6DS.

First published in 1942 under the editorship of B. A. Cooper, the *Silkmoth Rearer's Handbook* was later re-issued as a second edition by W. J. B. Crotch in 1956. Now, under the able editorship of B.O.C. Gardiner, we have this well illustrated, finely printed and much enlarged new edition.

The book is in three parts, with part I (pp. 1-78) headed "The Theory and Technique", consisting of 33 short chapters including among the subjects treated: Breeding Considerations; Dangers and Legalities; Obtaining Stocks; Cages and Containers; Foodplants; Artificial Foods; Parasites; Disease; Determining Sex; Pairing and Egg Laying; Hybrids; First Aid for Larvae; Relaxing; Setting and Storage; Exchanging, Packing and Posting; Exhibiting. Part II (pp. 79-224) deals with the various genera and species, and is arranged alphabetically under genera. Imaginal and larval descriptions are given together with other particulars and, with many species, a note of the foodplants. Part III (pp. 225-255) consists of two bibliographies: one of major taxonomic works (38 items), and one of selected references (118 items), and concludes with three indices: one to the species illustrated, one of common names and one of specific names.

This is an essential work for all interested in the breeding of silkmoths, contains much of interest to breeders of lepidoptera generally, and is also exceptionally good value for money, the cost of production having been subsidized by a generous bequest from the late C. O. HAMMOND. — J.M.C.-H.

Systematic List of the Belgian Lepidoptera by W. O. De Prins.

57pp., wrappers. Phegea Entomobrochure no. 4 Antwerp, 1983. Price 185 B.Fr. (= about £2.40). Obtainable by payment in advance on National Giro Account: Brussels 000-0106543-37. Address: Verenigiging voor Entomology, Diksmuidelaan 176, B. 2600, Antwerp.

2,360 species are here listed, though according to the author there are still many more species in Belgium awaiting discovery. The List is based on those of Kloet & Hincks (1972), Karsholt & Schmidt Nielsen (1976), Lempke (1976) and Leraut (1980); with the general pattern followed being that of Leraut, except for the Nepticulidae which are treated according to Van Nieukerken (1982).

Synonyms are included as currently used in the Belgian literature and where it is obviously necessary to differentiate the taxa. To prevent any confusion over a species' identity, every species' name is followed by the number in the Leraut list in brackets.

The List is printed in double column in a small but clear type, and is furnished with a useful index. — J.M.C.-H.

The Dragonflies of Great Britain and Ireland by C. O. Hammond.

Revised Edition by R. Merritt. 116pp., including 20 coloured plates, 23 text figures and 45 distribution maps, 4to., Harley Books, 1983. £16.95.

Following its publication by Curwen Press in 1977, the book received excellent notices and was fairly soon out of print. Now Harley Books have issued this welcome second edition, which should prove at least as popular considering the marked increase in interest in the Odonata over the past few years.

Notable features of the new edition are: (1) Inclusion among the coloured plates of figures of *Coenagrion lunulatum* Charpentier, a species discovered in Ireland in 1981, and new to the British Isles; (2) Extensive revision of much of the text, and (3) Updating of the distribution maps with, we are told, over 7,500 additional records.

The check list (pp. 26-27) includes an additional seven species, all except *C. lunulatum* being classed as vagrants or migrants not established in Great Britain or Ireland, though these six are not figured, described or mapped in this book. The name *Sympetrum danae* Sulzer replaces that of *S. scoticum* Donovan in the revised edition.

This is an outstanding work particularly on account of the coloured plates and enlargement of many of the figures, which show clearly the distinguishing characters and so provide a ready means of identification. — J.M.C.-H.

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CALLISTO COFFEELLA A SPECIES NEW TO BRITAIN
CALLISTO COFFEELLA (ZETTERSTEDT)
(LEP., GRACILLARIIDAE):
A SPECIES NEW TO BRITAIN

41

By R. M. PALMER¹, E. C. PELHAM-CLINTON² and
M. R. YOUNG³

On the 18th June, 1983, two of us (R.M.P. and M.R.Y.) visited Glen Callater, which is situated some two miles south of Braemar in South Aberdeenshire (V.C.92). The glen runs approximately N.W. to S.E., rises from 380 m at Glen Clunie to 600 m and then has at its head a series of base-rich corries renowned for their arctic-alpine vegetation. Following the late spring of 1983 there were fewer species flying than is usual for mid-June here, and the comparative state of the season may be illustrated by the fact that *Lita virgella* Thunb. was newly emerged and *Ematurga atomaria* L. in full flight.



Callisto coffeella (Zetterstedt), male:
Glen Callater, Aberdeenshire (x 8).

At about N.G.R. NO 162 870, at an altitude of 450 m and at about 11.30 a.m., a Gracillariid was found sitting on a lichen covered rock in full sunlight by R.M.P. The moth, which was in good condition, showed no inclination to fly and was easily boxed. Neither R.M.P. nor M.R.Y. could identify it, but the following autumn E.C.P.-C. saw it and tentatively named it as *Callisto coffeella* (Zetterstedt) (= *interruptella* (Zetterstedt) = *blandella* (Müller-Rutz)), a species not previously recorded in the British Isles; and this identity was later confirmed by comparison with the series at the British Museum (Natural History). The specimen has been presented to the Royal Scottish Museum by R.M.P.

On the Continent this species is montane, occurring in the Alps and in Scandinavia. The larva feeds on *Salix*, at first mining,

¹ Glenholme Gardens, Dyce, Aberdeenshire.

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³ Department of Zoology, Aberdeen University, Aberdeen.

later in a folded leaf, becoming fully grown in August or September when it spins a large, smooth, tough, brownish cocoon in a fork of a twig of its foodplant. The moth emerges the following year. The only *Salix* recorded as a foodplant appears to be *S. hastata* but probably it feeds on other montane species as well. *It is notable that *Salix hastata* has been introduced in large quantities from continental nurserymen in recent years and is now widespread in gardens: there is thus a possibility that *C. coffeella* has been introduced with this plant, but in view of the remoteness of the place of capture it seems more likely that it belongs to our original arctic-alpine fauna and has been overlooked until now.

There were no willows immediately near the rock where the moth was found, but *Salix aurita* grows commonly as a small bush along the burns and *S. repens* is a common species there, at least in the lower glen. Glen Callater has almost all Scottish species of *Salix* growing in it, including the rarer upland species in the upper glen, but the species most like *S. hastata* in form and habit, and which is known from the lower glen where the moth was found, is *S. repens*, and it may be that it would be worth searching that species for larvae first.

Acknowledgements

For much information on the biology of this species, and its synonymy, we are grateful to Ingvar Svensson of Kristianstad, Sweden, Dr. Paolo Triberti of Verona, Italy, and Dr. Steven Whitebread of Magden, Switzerland. For the photograph of *C. coffeella* figured, we thank Mr. David Wilson of Much Hadham, Hertfordshire.

*Lt. Col. A. M. Emmet has kindly informed us that the Hering herbarium at the British Museum (Natural History) includes mines on *Salix arbuscula* only. This *Salix* species has not been recorded from Glen Callater but has been recorded rarely elsewhere in the Cairngorms.

COLEOPHORA SERRATELLA L.: A PREVIOUSLY UNRECORDED FOODPLANT. — On 25th. May 1983 in West Wood, near Winchester, VC 11, I noticed some leaves on a *Salix caprea* showing signs of being eaten by a Coleophorid larva and on searching found not the expected and easily recognised cases of *Coleophora viminalis* Zell. or *Coleophora albidella* D. & S. but two plain short cases. The larvae continued to feed on *S. caprea* for about a further 10 days, then fixed and produced in the latter part of June, adults which appeared to be *Coleophora serratella* L., and I have subsequently dissected one to confirm this. Emmet (1979) in "A Guide to the smaller British Lepidoptera" gives *Alnus glutinosa*, *Betula*, *Corylus* or *Ulmus*; occasionally on *Sorbus aucuparia*, *S. aria* and *Carpinus* and I am unable to find reference to foodplants other than these in other literature, so this appears to be the only record of *S. caprea* as a foodplant for *C. serratella*. — COL. D. H. STERLING, "Tangmere", 2 Hampton Lane, Winchester, Hants SO22 5LF.

THE DEMISE OF THE BLACK-VEINED WHITE:
A NEW THEORY

By A. M. EMMET*

As a member of the editorial panel I have been privileged to read Colin Pratt's splendid paper (*Ent. Rec.*, 95: 45 *et seq.*) before publication.

In general I fully agree with the conclusions he draws. However, he is left with a sense of uncertainty which I share with him. I am therefore going to suggest a new (so I believe) and paradoxical reason for the decline of the black-veined white: it was destroyed by its years of abundance.

We are told by conservation experts that in the case of species with discrete, local populations, any surplus stock from our breeding experiments must be liberated at the place of origin or not at all. It is better conservation to kill rare butterflies than to liberate them where they do not belong. The reason is that each colony develops its own finely adjusted genetic pool which generates a breed exactly suited to the microclimate and ecological circumstances of the habitat. This balance of genes is liable to differ between colonies; mix the genes and a less viable insect results.

A never-failing source of surprise is the immediate and often complete disappearance of a local species after a year of plenty. A good example of this is *Leucoptera malifoliella* (O. G. Costa) (*scitella* Zeller). One year it will swarm and whole stretches of hedgerow will be disfigured by its mines; leaves which should have been green are brown and the presence of this tiniest of moths can be detected from afar. The next year on the same hedgerow there is not a mine to be found and it may be more than five years before the population returns to normal.

Now consider these two paragraphs in conjunction. Can it be that excessive abundance leads to unfavourable genetic combinations? If the population of an isolated colony of butterflies expands suddenly, internal pressure will lead to dispersal. As a result of their peregrinations, butterflies from different colonies will mate together and a new combination of genes will ensue. Then, if the conservationists are right, the offspring will be less well adapted to their little niche and more vulnerable to the multifarious hazards threatening their survival.

With non-colonial insects there is no danger because they do not experience genetic isolation. It is only when populations become few, small and geographically remote that each will develop its own peculiar genetic balance and become vulnerable when this is upset by intruders.

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Well, that is my paradox. I know next to nothing about genetics and this may be all too apparent to readers; they will then at least have the fun of picking holes in my theory. If, on the other hand, this idea is worth development, that will be the task of someone better qualified than I am.

BLEDIUS SPP. (COL.: STAPHYLINIDAE) AT LIGHT IN THE LONDON SUBURBS; AND A POINT OF NOMENCLATURE. — Most unexpectedly, two species of this interesting genus of burrowing rove-beetles in 1983 visited my m.v. lamp here at Charlton, specimens occurring on two successive nights in June but at no other time. They were: *B. germanicus* Wagn. (= *limicola* Tott.), one on the 21st and three on the next night; and *B. arenarius* Payk., one on the 22nd. All were females. Both are more or less maritime like most of the genus, and cannot have bred locally; even in the days when saline or brackish marshes extended up the Thames farther than they do now, I find no evidence that either species occurred in the metropolitan area. I have in past years taken *B. germanicus* in the Thames estuary area (Allhallows and Stoke Marshes), but *B. arenarius* never before in W. Kent. The only possible explanation would appear to be a migratory flight from some remnant of saltmarsh on either bank of the river at least seven miles to the east, but the arrival of several individuals at the same spot does seem extraordinary.

I deliberately follow Freude, Harde & Lohse (1964, *Käfer Mitt.*, 4: 98) in calling the smaller of the above two species not *fergussoni* Joy but *arenarius* Payk. — by which name it has been known for well over a century — as a gesture of protest against the use of a name in a sense flatly contrary to that intended by its author. I invite the assent of entomologists to the broad general proposition that a name ought to be applied to an insect possessing the characters attributed to it by the describer, and not to one which he expressly or implicitly excluded from his application of the name, except where there are really sound reasons against such a course. Now, the entire *raison d'être* of Joy's varietal name *fergussoni* was to denote a local race of Paykull's *B. arenarius* having largely dark instead of the typical largely pale elytra; by what right, therefore, is Joy's clearly expressed intention henceforth to be flouted by including in the definition of his name the typical *arenarius*? Such a glaring violation of the above commonsense principle, for the sake of a mere legalistic technicality concerning homonyms, is but one more proof on top of others that the rules of nomenclature as we have them to-day are producing some perverse and unacceptable consequences and urgently require modification. (It should be noted that this has nothing to do with the question of whether the var. *fergussoni* is worth retaining as a separate entity, on which I express no opinion.) — A. A. ALLEN.

ADDITIONS TO THE HETEROCERA OF MALTA
ADDITIONS TO THE KNOWN LEPIDOPTERA
(HETEROCERA) OF THE MALTESE ISLANDS

45

By ANTHONY VALLETTA, F.R.E.S.*

Since the publication in 1973 of my booklet *The Moths of the Maltese Islands*, a number of additional species have been taken by myself and by friends who have kindly passed on to me their captures, and whose names appear in the following account. All the species recorded from Rabat were taken by my friend Paul Sammut.

ARCTIIDAE

Lithosia quadra L. (Lithosiinae) Ghadira, Mellieha Bay, a single male taken by L. Cassar, 3rd August 1976.

NOLIDAE

Nola cristatula Hbn. Rabat, four taken 14th July 1979, two in June 1981 and one in September 1981.

NOCTUIDAE

Dryobotodes tenebrosa Esp. (Noctuiinae). Benghisa, one taken 18th October 1979.

Euxoa robusta Eversm. (Noctuiinae). Ghadira, Mellieha Bay, two taken 6th April 1976; Rabat, one taken 26th September 1981.

Mythimna prominens Walk. (Hadeninae). Ghadira, three taken 6th April 1976; Rabat, one taken 25th September, one taken 18th October 1981; Mtahleb, two taken 29th September 1982.

Mamestra blenna Hbn.: *peregrina* Tr. (Hadeninae). Ghadira, taken 15th April 1974 by P. Sammut.

M. brassicae L. Benghisa, 6th June 1974. It seems it was quite common by the end of last century according to Prof. Borg in *Daily Malta Chronicle* 9.I.1899.

Cleophora chabordis Ob. ab. *albicans* Stgr. (Cuculliinae). Rabat, taken 20th March 1977.

Blepharita vallettai De Laever (Cuculliinae). Recorded in error (in *The Moths of the Maltese Islands*, p. 31) as *Blepharita solieri* Boisd. subsp. *spinosa* Chretien (cf. De Laever, *Shilap. Revta. lepid.*, 8 (31) (1980): 197-200).

Athetis flava Ob. (Acronictinae). Rabat, taken 23rd May 1974.

Eutelia adulatatrix Hbn. (Euteliinae). San Gwann, taken 26th October 1974.

Catocala conjuncta Esp. (Catocalinae). Buskett, 2nd August 1979, I disturbed this moth while beating ivy for micros, when it
*257 Msida Street, B'Kara, Malta.

flew straight into my net; a week later two more were disturbed at the same locality; it was also seen 4th August 1980, and in August 1981 and 1982. The species is very local, being found only in the vicinity of a few old oak trees (*Quercus robur*) growing in a garden. It is surprising that this beautiful moth was not discovered long before at this locality which is so much frequented by collectors.

C. nymphagoga Esp. Buskett, on 28th June 1973 I boxed a moth in broad daylight, and the following day disturbed two more from under an oak tree. P. Sammut took two the evening of 28th June 1973: they were on the empty bottles of Coca-cola. I noted it on 18th July 1980, and understand it was again seen in July 1982. This is another species that appears to have been overlooked.

Grammodes stolidus F. (Catocalinae). First taken by A. Bezzina at M'Skala in July 1976. I took a second one at Benghisa, 3rd September 1977. Three taken by J. Briffa at Airport Hotel, Luqa, 4th September 1980.

Clytie sancta Stgr. (Catocalinae). Luqa, a female taken at Airport Hotel, by J. Briffa, 4th September 1980, is suspected Middle East import.

Grammodes geometrica Rossi (Catocalinae). Bahrija limits of Rabat, taken July 1977 by S. Schembri. In 1982, I visited this locality and found the species quite common close to the fresh water spring, where it was still on the wing on 9th October, but there may be two broods.

Dysgonia torrida Guenee (Catocalinae). I had this species as long ago as May 1949: it was mixed with *D. algira* L. from which it is somewhat difficult to separate at a glance. I found three larvae in my garden at B'Kara, feeding on *Parietaria officinalis* from which pupae formed 3rd, 7th, 10th October, producing moths 28th, 30th May and 5th June 1957. I also formed larvae at Attard feeding on *Ricinus communis*.

Herminia crinalis Tr. (Hypeninae). Buskett, taken by me in 1949 whilst beating ivy. Still found there from May to late September, but less common than *Hypena obsitalis* Hbn. This species was inadvertently omitted from my 1973 publication.

GEOMETRIDAE

Chlorissa viridata L. (Geometrinae). Benghisa, one taken 20th February 1974.

Idaea determinata Stdgr. (Sterrhinae). Benghisa, taken 7th October 1976.

I. rubicostata Z. ab *incarnaria* H.-S. Benghisa, taken 17th October 1974.

Ortholitha chenopodiata L. (Larentiinae). Benghisa, taken 15th November 1974.

Ecliptoptera silaceata D. & S. (Larentiinae). Bnghisa, 16th March 1974.

Menophra japygiaria Costa (Boarmiinae). Buskett, two taken by P. Sammut, 12th October 1974.

PYRALIDAE

Actenia glaucinalis Hbn. (Pyralinae). B'Kara, taken 16th October 1973 and 20th October 1975.

Dattinia infulalis Led. (Pyralinae). St. Lucian Tower, M'Xlokk, taken at light by S. Schembri, 10th October 1975.

Euclasta splendida H.-S. (Pyraustinae). Ghar Lapsi, 9th October 1974, taken by beating.

Mecyna asinalis Hbn. (Pyraustinae). Bnghisa, taken 3rd July 1975 and 30th April 1977; Rabat, taken by P. Sammut 27th June 1979 and 30th June 1981. A variable moth both in size and colour.

Eurrhpara hortulata L. (Pyraustinae). Qormi, one taken by C. Briffa, 26th May 1980.

Tegostoma subditalis Hbn. (Odontiinae). Bnghisa, taken 7th October 1973.

TORTRICIDAE

Aphelia unicolorana Dup. Bnghisa, taken 14th April 1973.

Cnephasia oxientana Alph. Fort St. Lucian, M'Xlokk, by S. Schembri, 10th October 1975.

GELECHIIDAE

Ethmia bipunctella F. B'Kara, two taken at light, 2nd September 1974.

TINEIDAE

Ateliotum insulare Rebel M'Skala, one taken by A. Bezzina, 23 November 1978.

SESIIDAE (AEGERIDAE)

Bembecia scopigera Scop. Wardija, taken amongst *Rubus ulmifolius* Schott on 24th May 1975; and again by S. Schembri at Wied Quirda in August 1977. In 1981, I noticed it in good numbers at Wardija during September and October, resting on dried *Galactitis* sp. and flying with the *Polistes omissus* when it is not easy to distinguish one from the other.

Chamaesphecia sp. near *cerifrons* Z. This small sesiid was quite common near Slug Bay, Mellieha, flying among different grasses, June 1979.

Acknowledgements

I wish to express my heartfelt thanks to all those whose names appear above and who kindly passed on to me their captures.

I am most grateful to Mr. D. S. Fletcher, Dr. J. D. Bradley, Mr. M. Shaffer and Mr. A. Hayes of the British Museum (Nat. Hist.) to Mr. Ed. De Laever of Belgium and to Dr. L. Gozmany of Hungary for their constant help.

A FEW LEPIDOPTEROUS NOTES FROM S. NORFOLK, EARLY AUG. 1983. — The following observations, made while staying with my good friends Mr. and Mrs. A. W. Gould at Foulton, near Swaffham (4-8. viii), are possibly worth reporting.

Much to my surprise I came upon three specimens of *Eilema deplana* Esp. (Buff Footman) at separate spots resting on flowers of devil's-bit scabious beside a broad ride in the pine-woods near Foulton, about noon on a warm and intermittently sunny day. Had I been searching for them, others could probably have been found. According to the works at hand (which do not recognize the species as resident in East Anglia) this moth, like all of its group, hides during the day in trees and bushes; so it would be interesting to know whether the habit of daytime resting in the open on flowers represents a change in the species' behaviour. Barrett (1895, *Lep. Brit. Isl.*, 2: 223), writing of the allied *E. complana* L., mentions that it is very fond of sitting on the blossoms of thistle and *Scabiosa arvensis*, but only after dark. Possibly the above instance is not unconnected with the fact that *deplana* seems to have had an unusually good season in 1983; for not only were examples noted at the house lights at Foulton, but also, one came to my m.v. lamp here (Charlton, S.E. London) — the first I have seen in this district.

At the Warren Wood, Thetford Forest, *Lycaena phlaeas* L. (Small Copper) was in great profusion everywhere in the rides and open spaces wherever flowers occurred, presenting, for us at least, a most unusual and pleasing sight. I understand that this butterfly is less common than formerly, and indeed I saw no others during my short stay in Norfolk — even in exactly similar conditions in the Foulton pine-woods. A collector might have contrived to pick out some varieties, though we (being intent on other quarry) noticed none. No obvious reason for such phenomenal local abundance presents itself.

Finally I may mention that wherever we went *Pyronia tithonus* L. (Gatekeeper) was in evidence, being in fact much the commonest butterfly during my visit. Similar in its ubiquity but of course less numerous was the Pyralis *Udea ferrugalis* Hübn., mostly having a very washed-out appearance, and giving the impression of a large invasion of the species some time previously. — A. A. ALLEN.

THE GEOGRAPHICAL DISTRIBUTION OF
BUDDLEIA-FEEDING IN *CUCULLIA VERBASCI*
(L.) (NOCTUIDAE) IN THE BRITISH ISLES

By D. F. OWEN*

Larvae of the mullein moth, *Cucullia verbasci*, feed on the leaves and flowers of mulleins, *Verbascum* spp., and figworts, *Scrophularia* spp., both members of the Scrophulariaceae. The most common food-plant is *Verbascum thapsus* which *C. verbasci* often defoliates, an unusual phenomenon among species dependent on herbaceous plants. Apart from an old record (Barrett 1900) of larvae on *Buddleia globosa*, an ornamental shrub introduced from Chile in 1774, no other food-plants have been reported in Britain until relatively recently when records of the larvae on the related *Buddleia davidii* began to occur. *B. davidii* is a native of China and was introduced to Britain as an attractive ornamental in 1896. In the 1930s the shrub began to colonise waste land, building sites and walls, and is now widespread in many parts of Britain (Owen and Whiteway 1980). Its ecological requirements are in many ways similar to those of

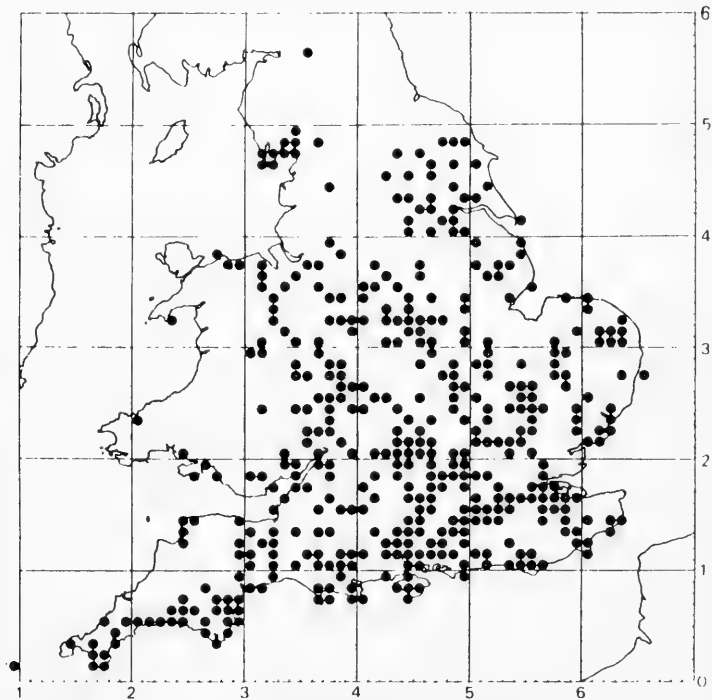


Fig. 1. The distribution of *Cucullia verbasci* in Britain.

*66 Scraptoft Lane, Leicester. LE5 1HU.

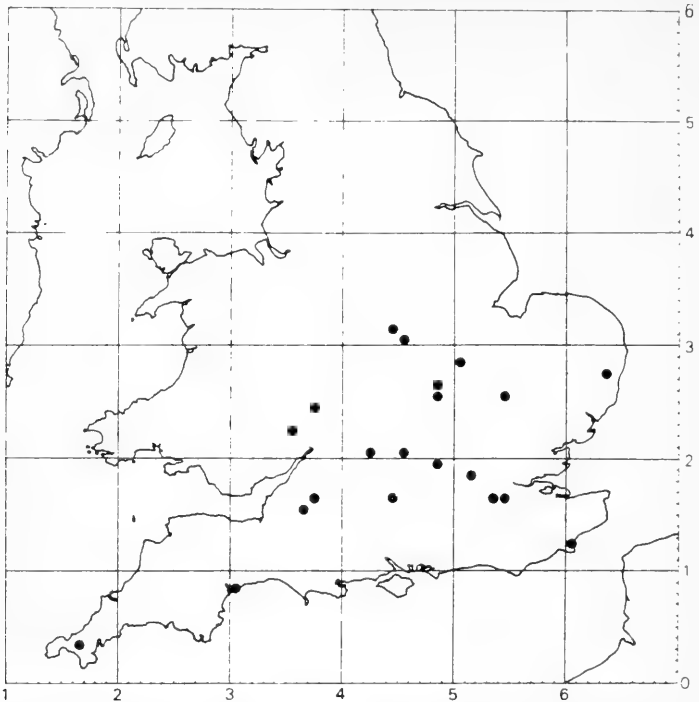


Fig. 2. The distribution of buddleia-feeding in *Cucullia verbasci* in Britain.

V. thapsus and the two species are often found growing side by side on waste land. This may be one factor that enables *C. verbasci* to switch to *B. davidii*, but it cannot be the only one.

Fig. 1 shows the distribution of *C. verbasci* in Britain and Fig. 2 shows the present (up to 31 March 1983) distribution of buddleia-feeding in *C. verbasci*. The spots on the maps represent one or more records in 10 x 10 km squares. As shown, records of buddleia-feeding are scattered throughout south-central England, indicating a widespread, albeit patchy, switch to a totally different food-plant. It would have been useful to have reproduced a map showing the distribution of *B. davidii*, but this is impossible because the Biological Records Centre restricts its recording to plants growing "wild" and does not count garden and park ornamentals. It is likely, however, that the shrub occurs in just about every 10 x 10 km square in England, but much less frequently on higher ground in Wales and Scotland.

In Britain (and probably elsewhere) *C. verbasci* is a specialist plant-feeder until recently confined to two related plant genera. Hence the switch to buddleia suggests a chemical similarity between the Scrophulariaceae and the Buddleiaceae, a possibility hinted at by Cronquist (1973). In this respect it is interesting to note that two

species of weevils, *Cionus scrophulariae* and *C. alauda*, and an aphid, *Aphis verbasci*, normally restricted to Scrophulariaceae, have also been reported as feeding on buddleia (Owen and Whiteway 1980, Read 1978). It is likely that *C. verbasci* occurs within the natural range of *B. davidii* in China (Hampson 1906) but I have been unable to establish, one way or the other, if buddleia-feeding also occurs in China.

Acknowledgements

Fig. 2 is based on records resulting from published appeals (Owen 1977, 1983) and on my own observations. I thank F. B. S. Antram, J. P. Bowdrey, R. G. Crowther, W. Dickson, E. Duffey, G. G. Eastwick-Field, B. Gardiner, J. A. C. Greenwood, R. Heckford, J. E. Knight, C. G. Lipscomb, A. Miller, J. Owen, J. H. Payne, A. J. Showler, P. Sokoloff, R. Whiteway and E. H. Wild for sending records. The Biological Records Centre, Monks Wood, provided the bulk of the information for Fig. 1. Derek Whiteley drew both figures and Karen Gooding helped to assemble the information. Can anyone add more spots to Fig. 2?

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SPARGANIA LUCTUATA (D. & S.) IN NORFOLK. — A colony of the White-banded Carpet was noted among deciduous shrubs and trees bordering a coniferous forest near Great Hockham, Norfolk in June 1983. — E. F. HANCOCK, 'Abbotsford', Belmont, Ulverston, Cumbria.

INSECTS RECORDED ON OIL PLATFORMS IN 1982

By M. R. YOUNG*

As shown so clearly by Bretherton and Chalmers-Hunt (1983) 1982 was a remarkable year for insect migration to Britain with a number of reasonably distinct waves of immigrants, mainly from the south and south-west, but including some from the south-east. This was reflected in the abundance of catches made for me on various oil platforms in the North Sea and this note comments on the significance of these records.

My recorders catch all insects that they notice, not just moths, but are not working continuously on the oil platforms, and so the samples are regrettably incomplete; however a very clear general pattern emerges, which was also apparent in the records for 1980 summarised by Young (1981). Early in the season, until perhaps mid July, the great preponderance of insect arrivals are hover-flies, whereas later in the season many moths are found and the flies disappear. The Syrphidae which are involved are all common species in Britain, whose general abundance here each year suggests that they do not depend on immigration. In 1982 their arrivals on the platforms often followed periods of south-easterly winds, however, and it seems likely that they travelled to the platforms from the continent, rather than from us. I would welcome comment from dipterists about their likely origins, or about migration of hover-flies in general, knowing only that some species, such as *Scaeva pyrastris*, *Metasyrphus corollae* and *Episyrphus balteatus*, are well known migrants which have been found in great abundance arriving in southern Britain.

Another insect which has now been found several times on oil platforms is the Lacewing *Chrysopa carnea*. Williams (1958) and Stubbs and Chandler (1978) suggest that Syrphidae migrate in association with the aphids on which their larvae prey, and it is suggestive that *C. carnea* is also an aphid predator. Unfortunately aphids are too small to receive the same attention on oil platforms as the flies or moths.

It is not clear why so few butterflies or moths are found on oil platforms in the early season. In northern Britain migrant Lepidoptera are always scarce at this time and their absence on oil rigs may merely reflect this scarcity; however in 1982 obvious species such as the Red Admiral were present in Aberdeenshire in July, whereas the first records of Lepidoptera on the platforms were in August.

The moth records have been noted in detail in Bretherton and Chalmers-Hunt (loc. cit.) and in general they showed the same pat-

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tern as the migrations observed in mainland Britain. Two maxima were obvious, in late September and in late October (corresponding exactly to mainland peaks), and there was a sprinkling of records at other times. The species involved, *Agrius convolvuli* most commonly, also agree with the general pattern, but perhaps surprisingly are not characteristically eastern in origin. In fact most moths arrived during periods of south or south-westerly winds in contrast to the hover-fly arrivals of June. It seems likely that they originated either from the low countries, France or from Britain itself. It will be most interesting to see what reaches the oil platforms if there is a period of easterly migration late in the season such as sometimes occurs.

I am most grateful to the many people who collected specimens for me, and especially to K. Watt for identifying the Syrphidae. A brief summary of the data is included below and detailed Syrphidae records are available from me if needed. Records were received from the following platforms and barges: Forties Charlie; Forties Delta; Fulmar; Auk; Sedco 700 and Sedneth 701. The barges were located in the general area of the platforms, which are roughly midway between Britain and Norway and are east of Aberdeen.

Species Recorded and Dates of Records

Chrysopa carnea Stephens, July, Aug.

Syrphus ribesii (Linn.), July, Aug. *S. torvus* Osten-Sacken, June, July, Aug. *S. vitripennis* Meigen, June, July. *Metasyrphus corollae* (Fab.), June, Aug. *Scaeva pyrastris* (Linn.), July. *Episyrphus balteatus* (Degeer), June, July, Aug. *Helophilus parallelus* (Harris), June.

Plutella xylostella (Linn.), Aug. *Agonopterix heracliiana* (Linn.), Aug. *Agrius convolvuli* (Linn.), Sept., Oct. *Acherontia atropos* (Linn.), Oct. *Phlogophora meticulosa* (Linn.), Oct. *Autographa gamma* (Linn.), Aug.

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THE STATUS OF THE PINE HAWK: *HYLOICUS PINASTRI* L., IN BEDFORDSHIRE. — 1983 m.v. catches show that *Hyloicus pinastri* is now present and thriving throughout the band of Lower Greensand which cuts diagonally across Bedfordshire. It was found to be the commonest hawkmoth in the Woburn Sands area, occurring regularly in high numbers and with 18 appearing in one evening. — K. F. WEBB, Kingsdown Avenue, Luton, Beds LU2 7BU.

OEOPHORA BRACTELLA (L.) IN HAMPSHIRE, 1983

By P. H. STERLING*

I wish to report the successful rearing of many specimens of *Oecophora bractella* (L.) (Lep: Oecophoridae) from Harewood Forest, VC12. This is the first record for the county of Hampshire, and there are only four other vice-counties in Britain for which there are any published records, (see below).

For the past three years Dr. J. R. Langmaid and the Sterling family have spent many cold March or April afternoons searching for Oecophorid larvae associated with dead wood. In 1981 one *Esperia oliiviella* (Fabr.) (see *Ent. Rec.* 94, 98.) was reared from the the above forest, but most of the larvae found either died of dessication or mould. The one *E. oliiviella* that was reared had been placed in a container in which strips of bark were laid on top of one another to a depth of three or four layers. The container was covered with netting and the top layer of bark sprayed daily. Many more Oecophorid larvae were found under the bark of dead oak in Harewood Forest this spring and were treated as above. Many individuals were reared, the two commonest species being *O. bractella* and *Esperia sulphurella* (Fabr.), with only a few *E. oliiviella* present.

The larva of *O. bractella* is variable in colour, but is generally olive-grey-brown with a light brown head. The plate of the 2nd segment is always darker than the head, and the anal plate varies from light to dark brown. Distinguishing this larva from those of the other *Esperia* species in the field is difficult. All three species have long thin bodies, move quickly when disturbed, and live underneath loosely woven silk tubes spun amongst loose bark or between the bark and the trunk.

The occurrence of *O. bractella* in a particular wood seems to be determined not by the species composition of dead trees, but by the condition i.e. microclimate of those present. Drs. M. W. Harper and J. R. Langmaid, this year, reared *O. bractella* from the bark of Ash, Larch, Pine, Spruce and Western Hemlock in the Forest of Dean, Glos. It seems that larvae prefer to live under thin bark in which there is some moisture, but not so much that the wood has rotted beneath, and in trunks which have probably been dead for between two to five years. A search was made in Roydon Woods, Brockenhurst, VC11, and although there was plenty of dead oak, no Oecophorid larvae were found. The bark on these large trees was noticeably thicker and presumably the correct microhabitat was not created between the bark and the wood. As

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a rule of thumb, thin dead bark which can easily be prized away with a knife is ideal.

Finally, an interesting association discovered in Harewood Forest was that most dead trees bearing Oecophorid larvae were also attacked by the "Honey Fungus", *Armilleriella mellia*, which grows in lignified strands between the bark and wood. Although the fungus showed no definite signs of having been eaten by the larvae, the association may be important for the conservation of these Oecophorids. Honey Fungus is highly undersirable to foresters because it can infect and kill trees stressed for other reasons, (eg. bark beetle damage). Infected trees tend to be removed as soon as the fungus is detected to prevent its spread, with the consequent removal of at least one of the potential habitats for these Oecophorids. Col. D. H. Sterling has contacted the managing foresters, Tilhill of Farnham, Surrey concerning the conservation of *O. bractella* in Harewood Forest, and I am pleased to report that they have kindly co-operated and are interested in the species' preservation.

Some of the published records for the four vice-counties are as follows: VC34: *Entomologist*, **66**, 260 (1933); VC35 many records; VC56: J. W. Carr, *The Invertebrate Fauna of Nottinghamshire* (1916); VC66: *Ent. mon. Mag.* **17**, 237 (1881).

Acknowledgements

I am grateful to Dr. J. R. Langmaid, Col. D. H. Sterling and Mr. M. J. Sterling for their assistance in the preparation of this article.

DREPANEPTERYX PHALAEINOIDES L. (NEUROPTERA: HEMEROBIIDAE) IN SURREY IN 1983. — A single specimen of this mainly northern species was taken by us whilst beating oak at Mitcham Common, Surrey on the 15th September 1983. The identification was confirmed by the BM(NH), to which three other examples of *D. phalaenoides* had been reported in 1983, and it was suggested that there is now a breeding colony in Southern England. — R. K. A. MORRIS, BSc., 241, Commonsides East, Mitcham, Surrey and J. A. HOLLIER, BSc., F.R.E.S., 74 Robinson Road, London SW17. [Of this rare and striking neuropteran, Wild (*Ent. Rec.*, **91**:285) records taking two specimens at Selsdon, Surrey in 1979. — J.M.C.-H.]

PELOSIA MUSCERDA HUFN.: DOTTED FOOTMAN IN BROMLEY, W. KENT. — A male *Pelosia muscerda* came to my garden m.v. trap on the night of 20th July 1983; it was accompanied by *Autographa gamma* L. and *Nomophila noctuella* D. & S. I assume it was a migrant as there are no suitable localities nearby and another example was reported from Kent on the 16th July (cf. Collins, *Ent. Rec.*, **95**: 222). — DR. J. H. CLARKE, 16 Patterdale Close, Bromley, Kent BR1 4H2.

A COLONY OF *KIRINIA CLIMENE* ESPER
(LEP. SATYRIDAE) IN GREECE

By R. F. BRETHERTON* and P. W. CRIBB**

During a recent visit to north west Greece we were fortunate in finding on 12th July 1983 a small but clearly well established colony of this species in the massif of Mt. Smolikas in the northern Pindos. About a dozen were seen and seven taken, of both sexes. A few eggs were obtained from a ragged female but these failed to hatch, presumably owing to the high temperatures in our car later in our trip. They were completely globular, slightly ribbed and pale yellow, and had been laid loose, without attachment to vegetation or to the sides of container; this suggests that in nature they would be dropped by the female while on the wing, as happens with *Aphantopus hyperantus* L. and some other Satyrids.

The colony occupied a small area in a damp gully, rich in grasses and other vegetation and surrounded by beech trees and bushes. The gully faced north to south and was in sunshine while we were there. Most of the specimens were seen around a large clump of wild raspberry. When flying they quite closely resembled the much more numerous females of *Maniola jurtina* L., the flight being similar and the obvious fulvous orange wing flash showing like that of a *jurtina* female. When at rest, the underside hind wing showed spots similar to those of *M. jurtina*, though slightly larger and more numerous. Flight when they were disturbed was short, usually ending with a dive for cover in a nearby bush, a habit which is also that of their larger congener *K. roxelana* Cramer; but the habitats of the latter are usually much drier and stonier. Our maps do not indicate the altitude of the locality, but it is probably about 1400m. Unfortunately lack of time prevented us from searching for it in other likely-looking places in the area, but we did not see it on rather similar ground elsewhere.

The only previous record of *K. climene* known to us in Greece is of a single specimen caught by L. Willemse (1977) at about 1100m. on a forest track near Trikkala, some 80kms south east of our locality. J. Thurner (1964) knew of seven findings, all of singletons, in several places in the mountains of south west Yugoslavia and in Albania, at similar distances to the north. Buresch and Tuleschow (1929) cited localities in Bulgaria. Higgins and Riley (1980), when introducing and illustrating the species in the revised edition of the *Field Guide*, referred in addition to single specimens from Romania. Later, Higgins commented that the status of *K. climene* as a breeding species in Europe is uncertain: this uncertainty can now be removed. The larval food plant is not known: it may be, like that of *K. roxelana*, *Poa annua* and other grasses.

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CALOPTILIA RUFIPENNELLA (HUEBNER) (LEP.: GRACILARIIDAE) IN THE EASTERN HIGHLANDS OF SCOTLAND. — Although it is not possible to be certain of its history of presence anywhere, it is perhaps worth continuing to document what appear to be recent increases in the range of the northern population (see Emmet, *Ent. Rec. J. Var.*, **91**: 92-96, 122-125; *ibid.*, **93**: 233; and Shaw, *ibid.*, **93**: 148-149) of *Caloptilia rufipennella*. Cones on *Acer pseudoplatanus* were seen on 24.viii.81 in the southern part of Glen Shee (VC 89, East Perthshire: NO 1461) and at Aboyne (VC 92, South Aberdeenshire: NO 5298), and on 1.viii.83 at Nethy Bridge (VC 95, Elgin: NJ 0020). Several cones were seen on each occasion, but its abundance at these sites did not approach the levels concurrently to be seen in the Lothians and in the Borders. — M. R. SHAW, Royal Scottish Museum, Chambers Street, EH1 1JF. 23.viii.1983.

CLAVIGESTA PURDEYI (DURR.), HYSPOPYGIA COSTALIS (FABR.) AND AGROTIS PUTA (HBN.) IN CUMBRIA. — A Heath portable light trap has been run in my garden at Ulverston, although somewhat sporadically, over a period of 17 years and light traps have also been operated at National Nature Reserves and other sites in the area. The above species have occurred in my garden trap for the first time in 1983 and have not been previously noted at any of the other sites worked. The Pine Leaf-mining Moth (*C. purdeyi*) was recorded on 7th. August 1983. The most northerly record mentioned in *British Tortricoid Moths*, Vol. 2 by Bradley, Tremewan and Smith, is at Formby, Lancs. The Gold Triangle (*H. costalis*) occurred as single specimens on four dates between 27th. July and 17th. August 1983. I have not seen any published records for this species in Cumbria. The Shuttle-shaped Dart (*A. puta*) was seen between 29th. July and 25th. August 1983 with a maximum of three on any night and a total of twenty specimens. The species was recorded at New Hutton in 1976 and Beetham in 1978 (see Dr. N. L. Birkett's note in *Ent. Rec.* **92**: 8). An extension of the range shown in *The Moths & Butterflies of Great Britain and Ireland*, Vol. 9, edited by J. Heath and A. M. Emmet, is apparent. — E. F. HANCOCK, 'Abbotsford', Belmont, Ulverston, Cumbria.

NOTES ON *TEBENNA BJERKANDRELLA*
(THUNBERG)

By R. J. HECKFORD*

Between 20th August and 4th September 1982 Mr. K. G. M. Bond (1983) found several specimens of *Tebenna bjerkandrella* (Thunberg) at Douglas, Cork: the first record for Ireland. During 5th and 6th September 1982 at Budleigh Salterton, Devon I found 13 tenanted cocoons of what I suspected might be *bjerkandrella*, on the underside of leaves of *Pulicaria dysenterica*. On 10th September I found four larvae and a similar cocoon on *Pulicaria* at Axmouth, Devon. The following day a *bjerkandrella* emerged from the cocoon from Axmouth.

From then until 24th October 1982 I recorded over fifty larvae, cocoons or vacated cocoons at the following places in Devon: Branscombe, Exmouth, Shaldon, Maidencombe, Brixham, Heybrook Bay and Plymouth. On 26th September 1982 I saw five larvae and one adult at Tregantle, Whitsand Bay, Cornwall. In each case the locality was on the coast and the foodplant was *Pulicaria*. I failed to find the species inland.

The larval feeding was conspicuous. Usually the larvae fed on the undersurface of a leaf, under a slight web in which the black frass collected. The uppersurface of the affected part of the leaf turned brown. Sometimes a larva spun the tips of two leaves together and fed on the uppersurface of the lower leaf. Usually there was only one larva to a leaf. The larvae preferred leaves about half-way up the stem on plants which still had green leaves all the way down the stem. They also preferred plants which were not growing close together.

I made a larval description as follows: head semi-transparent light brown: plate greenish with black speckles; body light green, gut darker green; pinacula black and anal plate transparent with black speckles. The pupation site was usually on the plant itself, either on the underside of a leaf where it joined the stem or on the stem. I could not find the pupation site when the larva did not pupate on the plant on which it had fed. The cocoon was spindle shaped and the pupa was extruded on emergence.

Meyrick (1928) gives "Kent to Dorset and Cambridge, local" and June and July for the larva. Accordingly I had assumed it was not uncommon and had been found before in the larval stage in Britain. Therefore I was very grateful to Mr. E. C. Pelham-Clinton for telling me that to the best of his knowledge the species had not been seen in Britain since 1947. As a result I have tried to discover the history of this species in this country, which I set out below. I could not trace any record of larvae being found and there

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are not many records of adults. The question is whether the larvae I found were the result of an immigration. I suspect that they were because in 1983 I searched without success for larvae in several places where I had found them in 1982.

Records

26.viii.1846. J. C. Dale took one specimen at Glanvilles Wootton, Dorset (Bankes, 1889; Dale, 1886).

11.ix.1853. Stainton (1855) under the name *Simaethis vibrana* Huebner states: "a specimen of this, taken September 11th, 1853 near Hurst, Sussex, is in the collection of Mr. Hemmings . . . This specimen was taken amongst *Inula dysenterica*. . ." This specimen is in the E. F. Studd collection at the Royal Albert Memorial Museum, Exeter, Devon. It has a label which reads "Holme Bush nr. Hurst. Sp. 11. 1853". It has another label with the words "Ex Coll. P. B. Mason".

The identity of Hurst and Holme Bush was a puzzle which Mr. Pelham-Clinton solved. The previous entry in Stainton referred to a species in the collection of Mr. Hemmings taken at "Holm Bush (*sic*), near Henfield, Sussex." There is a Holm bush (*sic*) Farm two miles south-west of Hurstpierpoint and south-east of Henfield. Therefore Hurst is undoubtedly Hurstpierpoint.

Stainton (1860) and Morris (1872) both record *bjerkandrella* from "Hurst, Sussex" without data. No doubt both refer to this record.

1857. Stainton (1855) in recording the above specimen also states: "Mr. S. Stevens has also a specimen taken near Arundel". Morris (1872) gives "Arundel". Goss & Fletcher (1905) state: "The late Mr. S. Stevens showed me a specimen that he had taken at Poling on *Inula* bloom, and I think stated that he had met with another at *Holmbush*". The E. F. Studd collection contains one specimen with an octagonal label which appears to read "S. S. Coling 1857" but the word "Coling" could be "Poling". It bears two other labels which read "Ex. Coll. Dr. Mason" and "S. Stevens. 1857". Poling is near Arundel. Therefore all these records probably refer to this one specimen.

?vi.1859. Stainton (1860) under the title "Rare British Species Captured in 1859" states: "Dr. Knaggs exhibited a specimen of this insect taken near Folkestone, at the end of June." This must be the specimen which Dr. Knaggs (1869) recorded as follows: "*Simaethis vibrana*. Ten years ago I took a fine specimen of this sparkling little gem on the Lower Sandgate Road. This was the fourth known British example, and I have not heard of any recent capture. It is said to affect *Inula dysenterica*." Goss & Bower (1908) give "Folkestone" as does Morris (1872). Meyrick (1895, 1928) gives Kent. These records may all be based on Dr. Knagg's specimen, which I cannot trace.

By 1860. More (1860) records this (under *Simaethis vibrana*) without details in an Isle of Wight list.

By 1872. Morris (1872) simply gives "York".

By 1878. Parfitt (1878) in listing the lepidoptera of Devon, states (under *Symaethis (sic) vibrana*): "In swarms sometimes in the autumn on the flower-heads of umbelliferae, flitting about in the most restless manner". Parfitt's records do not always seem reliable. His collection was presented to the Torquay Natural History Society in 1932 but unfortunately was destroyed by museum beetle by 1952 and no record was kept of the contents of the collection.

? 1889. Bolam (1931) states: "We took this first on Ord Common, near Berwick in 1889, where it was afterwards found to be not uncommon".

14.ix.1889. E. R. Banks (*loc. cit.*) captured one specimen at Corfe, Dorset which he recorded without locality, mentioning only the Isle of Purbeck. This specimen is in the British Museum (Natural History) and is labelled "Corfe 14.9.1889". This record is also given by Richardson (1913) (under the name *Simaethis vibrana*) who says: "a single specimen of this great rarity. . ."

By 1894. The National Museum of Wales has a specimen in the Griffith collection. It has no data label under it but there are two labels next to it which read: "Found (broken) among *Scintillulana* in lot 113 of Revnd H. Burney's Sale of 22.1.94. Mended by me. A. B. Farn" and "A. B. Farn Sale 1922".

By 1895. Meyrick (1895, 1928) gives Cambridge. Fryer & Edelsten (1938) repeat this, attributing the record to Meyrick. I have not been able to find further details.

By 1900. There are four specimens in the E. F. Studd collection without data except that one is labelled "Ex Coll. S. Stevens" and the others each have a similar label. In addition, of the remaining three, one has a label "E. Coll. Dr. Mason" and the other two each has the label "11.1905".

Stevens' collection was sold in 1900 in two parts. In the catalogue for 23rd April lot 69 reads: "*Bjerkandrella* 8, Fens". (Could this mean Cambridge? Not all eight could have been taken there, as one of the specimens must have been the one taken at Poling in 1857). Part of Mason's collection was sold on 28th November 1905. Lot 123 contained nine *bjerkandrella*. Studd's diary records that he bought lot 123 for 22/- "shared with Bower $\frac{1}{3}$ to him". Bower is B. A. Bower whose collection I believe went to Tring, but I cannot trace his specimens.

By 1919. The Whittle collection in the British Museum (Natural History) contains two specimens labelled "Ex. coll. Sidney Webb". Webb died in 1919.

13.viii.1922. Turner (1955) gives Haselbury Plucknett, Somerset with the year alone and recording the captor as A. R. Hayward.

Part of his collection is in the Coney collection at the City of Bristol Museum & Art Gallery. It contains one specimen labelled "Somerset H. P. 13.08.1922 A. R. Hayward".

?ix.1922. W. Mansbridge took three specimens at Totland, Isle of Wight. These are in the W. Mansbridge/H. Michaelis collection at Manchester Museum and are labelled "I. of Wight/Totland/ix.1922/W.Mbge". Goater (1975) gives Totland without further data. I assume this record is based on these specimens.

By 1925. The National Museum of Wales has a specimen in the Griffith collection with two labels. One reads "Sir Wm. Temple Sale 1925". The other reads "Probably bought from Meek.? Foreign". Thus this is a doubtful British record.

29.vii.1930. A. F. Griffith (1931) took one specimen at Southwick, Sussex. This is in his collection at the National Museum of Wales.

15.vi.1936. J. M. Jaques took one specimen at Studland, Dorset. This is in his collection which is at Sharpitor, Salcombe, Devon. This is a National Trust property.

By 1939. The late Mr. W. Parkinson Curtis (d. 1968) prepared an unpublished list of the lepidoptera of Dorset. He included a record from A. R. Hayward (d. 1939) for South Perrott, with no data. As already mentioned, part of Hayward's collection is at Bristol Museum. Part (I do not know if it is the rest) is incorporated in Jaques' collection at Sharpitor. Neither part contains a specimen from South Perrott.

7.ix.1947. B. W. Weddell took two specimens at Portholland, Cornwall. These are in the Royal Scottish Museum.

10.ix.1947. J. M. Jaques took two specimens (both now at Sharpitor) which give the locality as East Portholland, Cornwall. I am grateful to Mr. B. W. Weddell who tells me that this is the same locality as his.

By 1952. Ford (1954) in his review of the *Glyphipterygidae* gives "Kent to Cornwall and Cambridge". I do not know if Ford is referring to Jaques' and Weddell's unpublished records, but if not I know of no other records from Cornwall.

I have traced three specimens without full data. One is in the Ford collection at the British Museum (Natural History). It is just labelled "Pembroke". The other two are in the Griffith collection at the National Museum of Wales. They are labelled "e don. Brit. Mus."

The only other information I have about specimens of *bjerkan-drella* is contained in auction catalogues, for the sale of the following collections:— (1) William Farren. Sale 19th November 1895. lot 306 "*bjerkan-drella*" 1. (2) C. E. Fry. Sale 9-10th March 1896. Lot 533 "*vibrana*, Warren's collection" 1. (3) J. B. Hodgkinson. Sale 22-23rd November 1897. Lot 455 "*vibrana*" 3; lot 456 "*vibrana*" 2.

(4) C. G. Barrett. Sale 3rd December 1907. Lot 56 "*vibrana*" 1.

I have not been able to trace these specimens nor any details of their capture.

Parasites

I bred the following parasites: *Oiorhinus pallipalpis* Wesmael; *Gelis* sp. (possibly *instabilis* (Forster)) and *Hypomicrogaster suffolciensis* (Morley). *O. pallipalpis* attacks only *Choreutidae* and is common. The *Gelis* sp. is abundant and polyphagous. *H. suffolciensis* is apparently rare. It has been bred from *Pyrausta aurata* (Scopoli) and *Oncocera obductella* (Zeller).

Acknowledgements

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ALSOPHILA AESCULARIA D. & S. (MARCH MOTH): HORSE CHESTNUT AS A MAJOR LARVAL PLANT. — At Dartford in late June 1980 I found a number of greenish, striped looper caterpillars among the leaves on twigs issuing from the tree trunks where branches had been removed, the leaves displaying a distinct ragged appearance. I was unable at first to identify the larvae, as were several other lepidopterists to whom they were shown. However, I noticed the caterpillars possessed a pair of rudimentary prolegs on the segment preceding the first pair of prolegs and that suggested they belonged to the small group of moths which includes *aescularia*. The three textbooks at my disposal, the standard works by E. Newman and R. South, and W. Stokoe's '*The Caterpillars of the British Moths*', all provided inadequate descriptions omitting mention of rudimentary prolegs, and the latter author misleadingly describes the larvae as being 'small', whereas they are large in relation to the size of the moth. The illustration in 'South' is poor, and that in 'Stokoe' quite ludicrous. However, reference to the excellent illustrations in W. Buckler's '*The Larvae of the British butterflies and moths*', solved the problem. In the locality referred to almost all of several dozen trees produced *aescularia* larvae, and horse chestnut would appear to be the main larval foodplant, although neither Chalmers-Hunt nor L. and K. Evans record *aescularia* from this tree in their local works on the lepidoptera of Kent and N. E. Surrey respectively — B. K. WEST, 36 Briar Road, Bexley, Kent.

A NOTE ON REARING *ZERYNTHIA POLYXENA*
D. & S. AND *ZERYNTHIA RUMINA* L.

By DR. C. J. LUCKENS*

In their interesting paper on the Lepidoptera of the Cevennes (*Ent. Rec.*, **94**: 134-138), Dr. J. S. E. Feltwell and Mr. G. N. Burton described their experiences with *Zerynthia polyxena* D. & S. and their subsequent difficulties with finding suitable *Aristolochia* species on which to feed their captive larvae after their return to Britain. I have every sympathy with their predicament as I had very similar problems several years ago.

In April 1978 I found *Z. polyxena* flying quite commonly in a damp flowery meadow on the edge of the Forêt de Dom, Var. A search of the trumpet-flowered plants of *Aristolochia rotunda* L. soon revealed several ova and I also persuaded a captive female to deposit a dozen more. Most of these hatched after about seven days and I kept the young larvae in airtight plastic boxes in which they seemed to thrive quite well. Just before our return to Britain I collected a supply of *Aristolochia rotunda*, keeping it in closed polythene bags during our journey and merely putting the stems in water after our arrival home. The food plant lasted surprisingly well under these conditions and on this alone the pinkish-orange spined larvae attained their last instar. At this stage however it was obvious that the cut supply of *Aristolochia rotunda* was not going to suffice much longer. Fortunately a friend, Mr. John McFeely, located a plant of *Aristolochia pistolochia* L. at this critical point. I also eventually obtained a good supply of growing *Aristolochia clematitis* L. (which I have providently grown in the garden ever since) and the *polyxena* larvae took readily to both these species of birthwort. Larval progress seemed very slow in the final instar but nine examples pupated successfully, attaching themselves from stalks of the *Aristolochia* in the manner of *Papilio machaon* L., but with the silk girdle around the apical horns instead of the thoracic segments. All these pupae hatched in mid-April the following year and on emergence the imagines demonstrated a rather curious habit. Before expanding their wings they were extraordinarily active, wandering all over the netting cage in jerky movements, sometimes falling onto the floor, then immediately climbing up to the top again. This almost feverish activity took about fifteen minutes before they finally settled down at the top of the cage to expand their wings — long after I had given up hope and expected them to be crippled.

In view of this observation regarding *Z. polyxena* I was most interested to observe the same characteristic exhibited by the closely related *Zerynthia rumina* L. This butterfly, incidentally, I find a very much more difficult species to rear. The larvae seem to thrive

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only on *Aristolochia pistolochia* — itself a somewhat difficult plant to grow in Britain. *Rumina* larvae will eat *A. clematidis* but then appear to sicken and die. From fifteen half grown larvae collected in the Serrania de Cuenca in central Spain in 1982 I obtained only two pupae. One of these died before the winter but the other emerged in June 1983. It still had not expanded its wings after a full 17 minutes of rapid perambulation around the cage and I then had to leave for the morning surgery for which I was already ten minutes late! On returning three hours later however, the butterfly was flying in the cage with perfectly formed wings.

It is difficult to understand the biological advantages of this characteristic in the two *Zerynthia* species. Rapid continuous movement surely attracts predators at a stage when a butterfly is flightless and at its most vulnerable. Whereas *Z. polyxena* inhabits damp meadows, *Z. rumina* usually occurs on dry rocky hillsides and the two species rarely fly on the same ground. A common environmental advantage therefore seems unlikely. Can anyone suggest a hypothesis for this curious activity?

FRASS DISPOSAL BY LARVAE OF THE VESTAL: RHODOMETRA SACRARIA L. — Although *Rhodometra sacraria* turned up in so many places during 1983 I was not fortunate enough to take any specimens myself. However, I was given a few eggs and from these I reared a very nice series.

The larvae were kept in plastic boxes, the size of which was increased as the larvae grew. I never observed the larvae to leave their food plant (at first, Knotgrass: *Polygonum aviculare* L.) and yet the frass was always either on the sides or the lid of the box, mainly the latter. One evening I decided to watch the larvae to see if I could discover how this came about and was fascinated to observe that as the frass appeared it did not drop as would be expected but remained attached to the anal claspers. Within seconds the larvae were seen to reach round sideways and somehow take hold of the frass, probably with their thoracic legs rather than with their mandibles, but of this I could not be sure, and with a quick straightening of the body hurl the frass away.

When the caterpillars were nearly fully grown I transferred them on to dock. The droppings became more moist but the same habit persisted and although the paper tissues lining the bottom of the box remained fairly clean the lid soon became very soiled. The reason for this behaviour puzzles me. Is it to dispose of tell-tale droppings from the eyes of predatory creatures, to prevent fouling of the food plant or for some other reason? I should be interested to learn whether this habit has been observed before and if so, whether it is peculiar to The Vestal. — G. E. HIGGS, The Cottage, Willen, Milton Keynes.

FIRST OCCURRENCES IN BRITAIN OF TWO PLANT BUGS (HEM.-HET.)

By A. A. ALLEN, B.Sc., A.R.C.S.*

I. *Nysius graminicola* Kolen. (Lygaeidae). — Southwood & Leston (1959:85) justly remarked: "It is possible that other *Nysius* species, which could be confused with *N. thymi*, occur in Britain". Later in the same year, G. E. Woodroffe showed that *N. thymi* Wolff (sensu auct. Brit.) included a second species, *N. ericae* Schil. — the smaller, commoner, and more eurytopic of the two. Another in this group of nearly related species is here added to our list, bringing the British members of the genus up to four. For the purposes of our limited fauna, *Nysius graminicola* may be said to furnish a link between *N. ericae* and *thymi* on the one hand, and *N. helveticus* H.-S. on the other; agreeing with the two former in its unkeeled scutellum and more moderately developed antennae, and with the latter in its more slender and elongate build and the lack of definite blackish marks on the corial disc.

As the characters separating these closely allied insects are individually slight and doubtless liable to some variation, it is desirable to find as many as possible that appear usable in practice and consider them in conjunction when attempting a determination. The following comparison, which is with *N. ericae* and *thymi* conjointly unless otherwise specified, is based on my single male of *N. graminicola* and characters given for the species by Stichel (1957):—

General form more elongate and slender, about as *helveticus*.

Antennae distinctly longer, not so long and stout as in *helveticus* but intermediate in length; segments 2 and 3 clear testaceous with base very narrowly but definitely blackish (2), or a brown ring just beyond base (3) — these segments in the other species wholly obscure brownish or even (some ♂ *ericae*) blackish; or if lighter (♀ *thymi*) base not definitely darkened.

Legs somewhat more elongate, slenderer than in *thymi*; clear testaceous (though according to Stichel darkened at base and apex), hind femora much less heavily blackened than in most ♂♂ of *ericae* and *thymi*.

Scutellum: ground-colour yellow-brown as in *helveticus*, concolorous with thorax, instead of largely deep black.

Corium lurid-testaceous, semitransparent — in the others opaque, except medially in *helveticus*; as in the latter, veins with at most only a few slight and indefinite dark lines or spots, and none on the two outer long veins; contrasting most with ♂ *ericae* where the marks are often strong (in *thymi* more reduced, cf. Woodroffe's figs. 1, 2). Apical dark mark obviously smaller and less black, clear space between it and the subapical mark on inner margin long (unlike *ericae* or ♀ *thymi*), more like ♂ *thymi* (Woodroffe, fig. 1a) but still longer. (In *helveticus* this is somewhat as in ♀ *thymi*, fig. 2a.) *Membrane* clear (in ♂ *ericae* alone lightly flecked and basally clouded).

Studland, Dorset, a male found under a heather clump on sand between Little Sea and the dunes, with plenty of *Scolopostethus decoratus* Hahn, the beetle *Aegialia arenaria* F., etc., 5.v.77. It was

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taken for *N. helveticus*, a species I had not met with, attached to heather and of similar general aspect; but on comparing it with specimens in my collection, it was seen not to be that. Mr. W. R. Dolling, at the BMNH, kindly determined the bug as *N. graminicola* and was able to match it very closely with examples in the General Collection there. Stichel records the species from S. France, Spain, Portugal, N. Africa, Italy, and South-central Europe. Like *ericae*, but unlike *thymi* and *helveticus*, it does not seem associated with a particular plant. The presence of such a species at Studland is little surprising since this favoured area is well known as a refuge for insects of Mediterranean type in our fauna.

2. *Campylomma annulicorne** Sign. (Miridae). — This species has already been recorded as new to Britain (Nau, 1979) having been found in three Bedfordshire localities on osier in Sept. 1978. However, two years earlier (July 1976) several specimens — perhaps 4 or 5, possibly more — flew to mercury-vapour light here at Charlton on various dates.

Because in that excessively hot and dry spell insects were at the lamp in great quantity, these were passed at the time as presumably the fairly common *C. verbasci* M.-D. (which occurs in the district) and given but scant attention. It was only later that the conspicuously black first two antennal segments of the males marked them out as being different, and they were eventually named as above by Mr. Dolling. My specimens do not present either the blue-grey tint mentioned by Dr. Nau for the male, nor any chrome-yellow colour on the head; being in fact of much the same pallid olive-whitish-greenish in both sexes as *verbasci*, but without any darker clouding on cuneus or front of head, and a little larger and longer.

Most authors, e.g. Wagner, give *Salix* (unspecified) as the food-plant of this bug, but, interestingly, Dr. Nau found it attached to *S. viminalis*, which so far I have not seen in this district. He also found that it appeared exceedingly local, occurring in one place on a particular osier bush and on no others near at hand, nor on *S. alba*, *fragilis*, or *caprea* close by. This suggests some very special requirement. My Charlton examples may have come from a considerable distance, as some of the insects accompanying them must certainly have done. There is plenty of *Salix fragilis* in the area, but other willows and sallows are fewer. Probably by now *C. annulicorne* occurs in other counties besides Kent and Beds.

Acknowledgement

My best thanks are due to Mr. W. R. Dolling for identifying both species under notice, and for guidance in the Continental literature.

*Hitherto written *annulicornis*, but generic names ending in *omma* 'eye', like *soma* 'body', etc., are neuter.

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ANASIMYIA CONTRACTA TORP & CLAUSSEN, 1980 (DIPTERA: SYRPHIDAE) IN NORTH LANCASHIRE. — The recent note by A. A. Allen (*Ent. Rec.* **95**: 72) reminded me that in my collection is a specimen of *Anasimyia contracta* which is worthy of record. It is a female taken at Leighton Moss, N. Lancashire (VC60/SD48 75) on 25 June 1953. The specimen was, of course, until recently standing as *A. transfuga* (L.). Last year I showed the specimen to Mr. A. E. Stubbs as I believed it to be of the newly-separated species. Mr. Stubbs kindly confirmed my suspicion and mentioned that Leighton Moss considerably extended the known range of the species in England. In his note on the new species (Stubbs, A. E. 1981, *Proc. Trans. Br. Ent. Nat. Soc.*, **14**: 10-11), Mr. Stubbs notes that *Typha latifolia* seems to be a requirement for the occurrence of *A. contracta*. This plant is plentiful at Leighton Moss. On the same day and in the same locality I took a female of *A. transfuga* and a further specimen in the same place on 23 May 1964.

Both species seem to be uncommon in the north of England. The late A. E. Wright of Grange-over-Sands never took either of these species (which he would have recorded as *Helophilus transfugus* L.) though he worked the area diligently for many years and in 1940 produced a splendid list of Syrphids of the area (*N. W. Nat.* **XV**: 242-247). — DR. NEVILLE L. BIRKETT, Kendal Wood, New Hutton.

A HALVED GYNANDROMORPH AGRIUS CONVULVULI L. (CONVOLVULUS HAWK) ON THE LIZARD, CORNWALL. — On the night of the 25th August 1983, I was fortunate enough to take at m.v. light trap, a halved gynandromorph *Agrius convolvuli* in excellent condition, right side female. A north westerly breeze with a clear moonlit sky prevailed throughout the night. I would be interested to know if any other gynandromorph *convolvuli* have been taken in Britain. — A. F. J. GARDNER, "Jackson's Farmhouse", Charlecote, Nr. Warwick CV35 9EW [We are unaware of any other instance besides the present of gynandromorphism in this species in Britain, though Tutt (*Nat. Hist. Br. Lep.*, **4**: 332-333) details five or six cases of this, apparently all with reference to continental examples. — J.M.C.-H.]

A NEW LOCALITY RECORD FOR *APATURA IRIS*
LINNAEUS (LEP.: NYMPHALIDAE)
FROM GREECE

By JOHN G. COUTSIS *

In the "Field Guide to the Butterflies of Britain and Europe" (Higgins & Riley, 1980), it is stated that *A. iris* is "absent from much of southern Europe, including peninsular Italy and Balkans". In the distribution map which is included, the distribution area for this species is clearly shown to be well outside the northern borders of Greece.

A. iris, however, was first recorded from Greece by Kattoulas & Koutsaftikis in 1977 (East Rhodopi Mts, 800-1800m). Higgins, apparently, was unaware of this record, but for justifiable reasons, as it was published in the "Annales Musei Goulandris", a publication of rather limited distribution amongst lepidopterists.

This butterfly was also recorded from Greece by Willemse in 1980 (Mt. Smolikas, Ipiros, 1400m), and by van der Poorten in 1981 (Mt. Vitsi, District of Florina, Macedonia).

On 25th July 1983, while collecting at an altitude of 1100m, in the Aspropotamos area, Pindos Mts, District of Trikala, Thessalia, Greece, I had the good fortune to capture two male *iris*, while they were feeding on excrement, and to observe another three specimens flying around the tops of trees. The locality is an artificial opening in a forest of mixed coniferous and deciduous trees, created by a dirt road that runs parallel to a stream flanked by willow trees.

This locality is situated just south of the 40th parallel north and is the southernmost of *iris* both for Greece and Europe.

Records from Italy (Verity, 1950), Spain and Portugal (Manley & Allcard, 1970), whether authentic, or doubtful, all refer to localities that are situated to the north of the Pindos locality.

It seems that the Pindos Mts, which are an extension of the Dinaric Alps, act as a natural passageway for the spreading of central European faunal elements into southern Europe.

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SCOTS PINE AS A FOODPLANT OF MICROPTERIX THUNBERGELLA F. (LEP.: MICROPTERIGIDAE) MOTHS. — During visits to Gaitbarrows N. N. R. (North Lancashire) on May 16 1981 and June 5 1983, I observed many moths of *M. thunbergella* feeding on the pollen of mature pines round the edge of the limestone pavement. Indeed, it seemed to be the foodplant of choice, as none was seen on any other plant. Pine is not quoted as a foodplant in any of my textbooks and John Heath told me he had no previous record of it on this. Has anyone seen the species on pine elsewhere or is it a purely local preference? — D. W. KYDD, 6 Yewbarrow Road, Ulverston, Cumbria LA12 9JS.

SUDDEN APPEARANCE OF BOTH LARVAE AND ADULTS OF POLYMIXIS FLAVICINCTA D. & S. (LEP.: NOCTUIDAE) IN RESIDENTIAL HOVE. — On the 3rd June 1983 I noticed evidence of considerable larval infestation on the tips of well grown mint (a small bed only three feet square) in our back garden. On inspection I found obvious noctuid larvae unfamiliar to me (each about 55mm in length) and probably in their last instar. I sent one to Mr. Colin Pratt of Peacehaven for identification. His reply was *P. flavicincta* a species regularly recorded over a period of years in coastal Sussex. I sent the remaining three larvae to the British Museum (Nat. Hist.) for record purposes. From the amount of eating on the mint shoots there had evidently been more than four larvae present.

The sequel to the above note occurred on the night of 29th September at 8.30 p.m. when several *P. flavicincta* were attracted to light on the glass of our kitchen door situated about 15 feet from the mint bed! This was followed by two more specimens on the 29th and three further specimens on the 30th. The following nights were probably unfavourable and no more appeared, although I kept watch nightly. On the 11th October I observed a female at rest on the wall immediately adjacent to the mint bed; from then on all activity ceased! I have left the growth of mint as it is, in the hope that in the spring some larvae may hatch out and repeat the pattern of 1983. I have not yet searched for eggs. I have lived at this address since 1963 and have never before seen *P. flavicincta* in Hove, which prompts me to think that there may be a sudden upsurge in this district.

As a boy living in Bedford 1918-1927, this species was common at rest and at light every autumn. I had the good fortune at that time to capture at rest a unique unicolorous buff example, which I presented to the late Mr. W. Rait-Smith from whom it passed on his death to the RCK collection at the British Museum. — R. M. CRASKE, 29 Salisbury Road, Hove, E. Sussex BN33 AE.

CHRYSEMELIDAE AND CURCULIONOIDEA FROM DUBBS MOSS 71
RECORDS OF CHRYSEMELIDAE AND
CURCULIONOIDEA (COLEOPTERA) FROM DUBBS
MOSS NATURE RESERVE, WEST CUMBRIA

By R. W. J. READ*

Introduction

Dubbs Moss Nature Reserve in Cumbria is situated 2 kilometres South West of Cockermouth and 1 kilometre to the North East of Eaglesfield village and it is one of several nature reserves in West Cumbria which are owned and managed by the Cumbria Trust for Nature Conservation. The reserve falls within two, one kilometre squares of the National Grid, NY10.28 and NY10.29 and it covers an area of approximately 18 acres. Overlying a narrow strip of Carboniferous limestone running at this point from South West to North East, Dubbs Moss consists basically of fen, scrub and old mixed woodland; and the whole area lies in a small depression completely surrounded by quite intensively cultivated farmland.

During the past three years I have, with the kind permission of the Cumbria Trust for Nature Conservation, and the Honorary Manager of the reserve Mr. John Callion carried out a small survey of the phytophagous Coleoptera of Dubbs Moss and the following list of species is the result of five visits made to the reserve between September 1980 and October 1981. The individual dates are as follows, 21.ix.80; 20.iv.81; 7.vi.81; 2.viii.81 and 3.x.81.

In most cases specimens were collected by sweeping and beating the recognized hostplants. Samples of leaf litter and moss were also collected from the scrub and woodland areas for subsequent examination and extraction of beetles. The details of collecting have been kept to a minimum in the present list and all the individual dates of capture are summarised to months only.

The Compartments

For convenience the reserve has been divided into four main broad compartments, briefly described and listed below. In order to save space, and facilitate ease of reference, each compartment referred to in the species list is indicated by the appropriate letter only.

A — This area is on the highest (76 metres) and driest part of the reserve and is essentially scrub hawthorn with a few scattered bushes of *Prunus spinosa* L. Other dominant plants are *Ulex europaeus* L and *Calluna vulgaris* (L.) Hull.

B — This is a predominantly wet fen area with rushes and sedges. It also includes large communities of *Angelica sylvestris* L., *Fili-*
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pendula ulmaria (L.) Maxim, *Lotus pedunculatus* Cav., and a small stand of *Iris pseudacorus* L. *Salix atrocinerea* Brot is the dominant tree in the wetter parts with scattered individuals of *S. viminalis* L. One interesting feature of this area is a small man made pond situated in the north west corner which has attracted a variety of aquatic life including insects.

C — This is birch woodland with scattered trees of Scots Pine, Mountain ash and Oak saplings. The wood is damp and shaded but in places there is an understory of honeysuckle and bramble with quite a luxurious carpet of ferns and bryophytes.

D — A narrow strip of bog and grassland, similar to B but containing a richer variety of herbaceous plants. There are also small, interesting patches of heathy vegetation and scrub near the main drainage ditch which runs parallel with the birch wood on the western side.

The nomenclature in the following list of species is according to Kloet & Hincks (1977).

CHRY SOMELIDAE

Oulema lichensis Voet — Tapped from *Angelica sylvestris* L., and *Filipendula ulmaria* (L.), A, June.

Cryptocephalus labiatus (Linnaeus) — general sweeping, C.; June.

Chrysolina fastuosa (Scopoli) — swept from general herbage, C, D; April, August.

C. staphylaea (Linnaeus) — At base of *Plantago lanceolata*, A; September.

Phaedon tumidulus (Germar) — general sweeping, A, C; June, August.

Hydrothassa marginella — on leaves of *Ranunculus repens*, B; June.

Prasocuris phelandrii (Linnaeus) — Tapped and swept from *Angelica sylvestris* and *Filipendula ulmaria*, B; August.

Phyllodecta vitellinae (Linnaeus) — beaten from *Salix atrocinerea*, C; June.

P. vulgatissima (Linnaeus) — beaten from *S. atrocinerea*, C; June.

Galerucella lineola (Fabricius) — one beaten from *S. atrocinera*, B; June.

G. tenella (Linnaeus) — swept in large numbers from *Filipendula ulmaria*, A, B; April, August, September, October.

Lochmaea crategi (Forster) — beaten from *Crataegus monogyna*, D; April.

Apthona nonstriata (Goeze) — on leaf of *Iris pseudacorus*, A; April.

Longitarsus luridus (Scopoli) — swept from low herbage, A; August, September.

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L. suturellus (Duftschmid) — general sweeping, A; September.

Chalcoides fulvicornis (Fabricius) — beaten from *Salix atrocinerea*, C; April June.

Mantura obtusata (Gyllenhal) — swept from low herbage, D; June.

Chaetocnema hortensis (Fourcroy) — swept from general herbage, D; June.

Sphaeroderma testaceum (Fabricius) — sweeping, mainly *Centaurea nigra*, A; September.

Psylliodes affinis (Paykull) — tapped from *Solanum dulcamara*, D; August.

Cassida rubiginosa Muller, O. F. — general sweeping, A; August.

ATTELABIDAE

Deporaus betulae (Linnaeus) — beaten from *Betula pendula*, C; June.

APIONIDAE

Apion curtirostre Germar — swept from low herbage including *Rumex acetosa*, B, C; June, September.

A. violaceum Kirby, W. — general sweeping low herbage, B; August.

A. ulicis (Forster) — beaten in numbers from *Ulex europaeus*, A; April.

A. carduorum Kirby, W. — tapped from *Cirsium arvense*, A; August.

A. loti Kirby, W. — general sweeping, A; June.

A. spencii Kirby, W. — swept from low herbage including *Vicia* sp. C, D; June.

A. viciae (Paykull) — tapped from *Lathyrus pratensis*, A; June.

A. craccae (Linnaeus) — tapped from low herbage, including *Vicia cracca*, A; September.

A. apricans Herbst — general sweeping, mainly *Trifolium pratense*, A; June.

CURCULIONIDAE

Otiorhynchus singularis (Linnaeus) — beaten from *Prunus spinosa*, C. April.

Phyllobius argentatus (Linnaeus) — general sweeping under *Betula*, C; June.

P. calcaratus (Fabricius) — tapped from bracken, C; June.

P. pomaceus Gyllenhal — swept from low herbage, D; June.

P. pyri (Linnaeus) — beaten from *Prunus spinosa*, A; June.

P. viridiaeris (Laicharting) — tapped from *Filipendula ulmaria*, B; June.

P. viridicollis (Fabricius) — swept from mixed herbage, D. June.

Polydrusus cervinus (Linnaeus) — general sweeping, C; June.

P. pterygomalis Boheman — swept from low herbage, C; June.

Barypeithes pellucidus (Boheman) — beaten from *Prunus spinosa*, A; June.

Strophosomus melanogrammus (Forster) — beaten from oak sapling, C; August.

Barynotus moerens (Fabricius) — grubbing at base of *Plantago lanceolata*, A; April.

Tropiphorus terricola (Newman) — base of *P. lanceolata*, A; April.

Sitona striatellus Gyllenhal — beaten from *Ulex europaeus*, A; September.

S. sulcifrons (Thunberg) — swept from low herbage including *Trifolium* sp. A; June.

S. suturalis Stephens — general sweeping, B; September.

Cionus scrophulariae (Linnaeus) — tapped from *Scrophularia nodosa*, D; June.

Cleopus pulchellus (Herbst) — adults and larvae on leaves of *S. nodosa*, D; June.

Leiosoma deflexum (Panzer) — on leaves of *Ranunculus repens*, A. September.

Magdalis ruficornis (Linnaeus) — beaten from *Crataegus monogyna*, A; June.

Acalles ptinoides (Marsham) — several in leaf litter, C; September.

Dorytomus taeniatus (Fabricius) — beaten from *Salix atrocinerea*, B; April.

Notaris acridulus (Linnaeus) — swept from general herbage, B; August.

Coeliodes rubicundus (Herbst) — sweeping under *Betula*, C; June.

Zacladus geranii (Paykull) — tapped from *Geranium pratense*, D; June.

Micrelus ericae (Gyllenhal) — tapped from *Calluna vulgaris*, A; April.

Cidnorhinus quadrimaculatus (Linnaeus) — swept from *Urtica dioica*, C; September.

Ceuthorhynchidius troglodytes (Fabricius) — at base of *Plantago lanceolata*, A; April.

Ceutorhynchus contractus (Marsham) — in leaf litter, C; September.

C. cochleariae (Gyllenhal) — in leaf litter, C; September.

C. litura (Fabricius) — tapped from *Cirsium arvense*, A; August.

C. pollinarius (Forster) — tapped from *Urtica dioica*, C; September.

C. viduatus (Gyllenhal) — swept from low herbage including *Stachys palustris*, D; June.

Rhinoncus pericarpus (Linnaeus) — at base of *Rumex acetosa*, C; April.

Phytobius comari (Herbst) — on leaves of *Potentilla palustris*, B; April.

P. quadrituberculatus (Fabricius) — in leaf litter, C; September.

Anthonomus bituberculatus Thomson, C. G. — beaten from *Crataegus*, A; August.

A. brunnipennis (Curtis) — beaten from *Ulex europaeus*. (This species is normally associated with *Potentilla erecta*), A; September.

A. pedicularius (Linnaeus) — beaten from *Crataegus monogyna*, A; April.

Curculio salicivorus Paykull — beaten from *Salix atrocinerea*, B; June.

Gymnetron labile (Herbst) — general sweeping, A; April.

Rhynchaenus rusci (Herbst) — swept from low herbage near to *Betula*, C; August.

Ramphus pulicarius (Herbst) — general sweeping, A; August.

The total number of phytophagous Coleoptera recorded from Dubbs Moss Nature Reserve in the present list is 74 — Chrysomelidae 21; Attelabidae 1; Apionidae 9; Curculionidae 43.

Acknowledgements

I wish to thank Miss J. Ketchen, conservation officer of the Cumbria Trust for Nature Conservation, for very kindly granting me permission to visit and collect on the reserve. I am also most grateful to the Honorary Manager Mr. John Callion for giving me unrestricted access to the reserve while collecting and for much useful information regarding the general natural history of the area.

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THE MARSH PUG AND DEATH'S HEAD HAWKMOTH IN NORTH WARWICKSHIRE. — On June 4th 1983 I netted a good specimen of *Eupithecia pygmaeata* Hbn. at Kingsbury Water Park, which was satisfactorily photographed. I understand that this is a new record for Warwickshire V.C.38.

Whilst visiting the same site on a birding trip, I was shown a fine example of *Acherontia atropos* L. by Mr. Edwin Hopkins, head warden of the Water Park. This moth was reportedly found on 12th October 1983, in a grass field near the River Tame (SP 213963) about a mile from the nearest potato field. — R. J. THOMAS, 23 Trentham Road, Harts Hill, Nuneaton, Warwickshire CV10 OSN.

SAWFLY FAUNA OF A WOODED PARK
WITHIN THE CITY OF EDINBURGH
(HYMENOPTERA: SYMPHYTA)

By A. D. LISTON*

(Concluded from p.21)

Notes on individual species

The two female specimens of *Pamphilius hortorum* were of the colour form *bicinctus* Benson, which has been treated as a Scottish-Scandinavian subspecies by some. This form was previously recorded from Perth., Aberdeens. and Inverness (Benson, 1945). Such forms also appear to occur in lowland central Europe (Lacourt, 1973).

Calameuta pallipes, a southern species, is found in this area on flowers of *Ranunculus acris* in unshaded but sheltered grassy areas.

Heptamelus ochroleucus and *Strongylogaster macula* are characteristic of fairly densely shaded, damp, ferny areas. Drier and more open sites in and around Edinburgh usually support *Strongylogaster lineata* (Fall.) instead of these two species, and most damp birch woods contain only *H. ochroleucus* and *S. mixta* (Kl.). *Strombocerus* appears to be more tolerant of ranges of shade and dampness.

Dolerus gonager is on the wing from mid April till late June on Corstorphine Hill, as in many other Scottish localities. Benson (1951-1958) gives V-VI.

Athalia liberta is represented by a single female collected in June 1981 near plants of *Alliaria petiolata*. This species may be extending its British range northwards and could be a recent arrival in the area (Liston, 1980a).

Eutomostethus luteiventris is restricted to three or four clumps of *Juncus effusus* growing in the wet flush on the south side of the hill. It is parthenogenetic with sedentary adults, this perhaps helping to maintain the species in its extremely restricted habitat.

Messa glaucopis was wrongly recorded as feeding on *Populus tremula* at this locality (Liston, 1980b). The host is actually *P. canescens* growing around the above mentioned wet flush. Previously recorded hosts of *glaucopis* in Britain are *P. tremula* and *P. alba*. Some botanists believe that *canescens* originated as a hybrid between these species. I know of no other stands of Grey Poplar in or near Edinburgh. *M. glaucopis* and its host were probably introduced from southern England.

Both *Tenthredopsis* species seem to be unusual amongst the sawflies feeding on Gramineae in that they are found regularly under trees casting heavy shade. All the grass-feeding *Dolerus* spp.

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except *liogaster*, and all the grass-feeding *Pachynematus* seem to require more open conditions.

Species of *Tenthredo* are generally polyphagous and limited to particular habitat types by factors other than the presence of host-plants. Three of the species present tend to occur in rank, nitrophilous vegetation (*livida*, *colon* and *mesomelas*). The first two of these also show a strong preference for sites in scrub or woodland. *T. mesomelas* can be equally abundant in suitable unwooded sites. *T. maculata* always seems to be found in light woodland. *T. balteata* is more typical of scrubby woods and open places. In Scotland it is most frequent in birch woods. *T. obsoleta* is an apparently anomalous presence. It would be expected in open or lightly wooded subarctic/subalpine type habitats. *Rhogogaster punctulata* is likewise, but not so strongly, associated with northern and upland habitats, favouring birch in Britain.

Adults of *Hoplocampa chrysorrhoea* are elsewhere usually found in flowers of *Prunus spinosa*, in the ovaries of which the larvae develop. Sloe does not occur on Corstorphine Hill and the adults have usually been taken near trees of *Prunus padus*.

The two adult male *Platycampus luridiventris* were not taken from Alder, but swept from birch. *Alnus* is the main host but continental literature records *Betula*, *Corylus* and *Rubus idaeus* as secondary hosts (Klausnitzer, 1978).

Pristiphora lanifica was new to the British list when first discovered at this site (Liston, 1981). A fourth female has been collected (on 7.5.81). *P. lanifica* is now known to occur in Aberdeenshire also (unpublished data). Adults and a few larvae have been observed on Corstorphine Hill only on two bushes of *S. caprea* growing in a small stand of birch where some other interesting sawflies were found, e.g. *Rhogogaster punctulata* and *Amaurone-matus amplus*.

The host of *Pontania proxima* at this locality is *Salix alba*, all of which seem to have been planted,

Both *Pristiphora ruficornis* and *Nematus viridis* are in my experience more abundant in drier sites with *Betula pendula* than on damp moors with *B. pubescens*.

Nematus leucotrochus seems to be scarce in Scotland. This is the only specimen I have seen. Like *N. ribesii* (Scop.), it flies early in the year, but has only a single generation. It is associated with dry-type woods containing *Fagus*, *Ulmus*, *Corylus*, etc. Benson (1951-1958) gives the hostplant as *Ribes*, chiefly *uva-crispa*, but *leucotrochus* has also been recorded from *Corylus* (Stritt, 1939).

Not included in the list is *Nematus spiraeae*, occurring on *Aruncus silvester* planted in gardens very close to the park, but not in it.

Hostplant associations

46 out of the 88 species recorded are associated with trees and

large shrubs. However, the commonest trees support very few sawflies: *Quercus*, *Fagus* and *Fraxinus* have none; *Acer*, *Pinus* and *Tilia* only 1 each; *Ulmus* 2. The scarcer tree species support many more, as follows: larvae of 11 monophagous and polyphagous species feed on *Betula*, and 8 others on *Salix*; 6 only on arborescent Rosaceae (*Crataegus*, *Sorbus*, *Prunus*); 3 on *Alnus*; 3 on *Picea*; 2 on *Larix*; 1 on *Populus*. 7 polyphagous species are chiefly associated with trees and shrubs, but these hosts do not include *Quercus*, *Fagus*, *Acer*, etc.

Of the other 42 species, 17 are probably grass-feeders; 3 feed on *Rubus idaeus*; 3 on ferns; 2 on *Ribes*; 2 on *Rosa* and 1 on *Juncus effusus*. The rest feed on a variety of herbaceous plants or have unknown hosts (2 species).

Discussion

The 88 species recorded represent approximately 18% of the known British sawfly fauna. 22 of these were recorded on the basis of a single specimen, indicating that numerous other species must remain undetected. This fauna also seems fairly diverse, more so than that of native or "primary" woodland, perhaps because of the greater number of plant species represented. Many of the sawflies are exceptionally localised within the park, some even restricted to one or two particular plants. Others maintain very low population levels, but seem to be more widespread.

Less disturbed areas of wood and scrub in other parts of south-east Scotland are richer in terms of numbers of species and individual sawflies, but Birch and *Salix* spp. provide a much greater proportion of niches, so that nearly all sawflies found there are Nematinae.

Planting of broadleaves for amenity took place on a large scale in the 18th and 19th Centuries. This must have severely reduced the number of sawfly species present without offering an equivalent number of new niches for other species. Nevertheless, several probable relict species seem to survive on Birch, Willow, Raspberry and some of the herbaceous plants, eg. *Amauronematus amplus*, *Pristiphora lanifica*, *Pamphilius hortorum*, *Rhogogaster punctulata* and *Tenthredo obsoleta*. Apart from *A. amplus*, these are typically northern or upland species.

Corstorphine Hill has, however, probably always also supported some species at the northern edge of their ranges, eg. *Tenthredo colon* and *Hoplocampa chrysorrhoea*. These essentially southern species may have become more successful at this locality in recent times because planting of ornamental trees provided increased shelter and promoted the development of a more luxuriant ground flora. *Messa glaucopis*, *Pristiphora laricis*, *P. wesmaeli*, *Sharliphora amphibola*, *Pontania proxima*, *Pachynematus scutellatus* and *P.*

montanus are species which were probably introduced with their hosts by man. Additionally, *Heterarthrus aceris* and *Parna tenella* feed on plants which in southern Scotland are naturalised but not native. Creation of ungrazed, open grassland in the park itself seems to have been very recent. By the time areas like this existed, the site was completely isolated by built-up zones. This would seem to explain the absence of several common and conspicuous meadow species whose foodplants are present, eg. *Tenthredo arcuata* Forst. and *T. schaefferi* Klug. Grazed grassland is always extremely poor in Symphyta. That on the east side of this locality was no exception. Only *Dolerus aeneus* could be found there, though this in some numbers.

Summary

Management and interference with the vegetation of a park in the city of Edinburgh, particularly the planting of broadleaved tree species for amenity during recent historical times, seems to have significantly altered the composition of the sawfly fauna. As the vegetation changed, species with southern distribution types may have become better represented and more abundant at the expense of northern and upland forms, some of which survive in fragments of relict vegetation.

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Notes and Observations

CURIOUS BEHAVIOUR OF AESHNA CYANEA MÜLLER: SOUTHERN HAWKER. — I have been studying the flora and fauna of a 9½ acre park in Eltham, London SE9, consisting of a lake, small still pond, woodland, garden and open lawns. During the hot summer of 1983, there was an abundance of dragonflies and damselflies skimming the lake and patrolling the woodland paths. On August 20, I observed a female hawker dragonfly, *Aeshna cyanea*, laying eggs in the rotting wood of a horizontal log that served as a beam for a tiny bridge over the pond. The shallow crevices in the damp wood were soft and smooth. It was five o'clock in the afternoon when I noticed the Aeschna in the dappled light. I watched her for at least 15 minutes as, time after time, she deliberately but gently pressed the tip of her body into a crevice. Several times she reversed her position from facing east to facing west, but continued to lay eggs in approximately the same place. I was within two feet of her, but she was not disturbed by my presence. At last, she flew slowly across the pond and out of view.

On August 21, at eleven o'clock in the morning, there was a repeat performance of the day before, possibly by the same individual. This time the insect was in full sun, although the wood had remained quite damp. I had never seen *A. cyanea* behave in this way, though have read that eggs are laid on submerged plants and sometimes in mud. Was this insect guilty of aberrant behaviour? Although I continued to visit the pond frequently, I did not witness this method of egg-laying again. Because this behaviour was of considerable interest to me, I thought I would share the experience with other naturalists. — J. W. CHANDLEY (Mrs.), 121 Tarnwood Park, Court Road, Eltham, London SE9 5PE.

THE MOUSE AT SUGAR IN BEDFORDSHIRE. — When my torch lit up a sugar patch during a round in early October 1983, I was surprised to see momentarily a fine specimen of the Mouse. This was not however *Amphipyra tragopoginis* Clerck, a frequent visitor to the sugar patch. It was instead *Apodemus sylvaticus* L. of the Order Rodentia — the Wood Mouse. — K. F. WEBB, 2 Kingsdown Avenue, Luton Beds LU2 7BU.

MYTHIMNA OBSOLETA HBN. (OBSCURE WAINSCOT) WITH DISCAL SPOTS ON UNDERWING: A POSSIBLE IDENTIFICATION PROBLEM. — Whilst dealing with *Mythimna straminea* Treitschke, *The Moths and Butterflies of Great Britain and Ireland*, volume 9, lists *Mythimna obsoleta* as a similar species, and draws attention to the presence of a discal spot on the underside of each wing of *M. straminea*, compared to the immaculate state of this region of *M. obsoleta*. This characteristic is not however a reliable one for separating the two species.

I took a series of six specimens which I took to be *M. obsoleta* at East Ham, Essex, (O.S. ref. TQ 439832), on 19th July, 1983

together with a single male *M. straminea*, on a sheet amongst a reed-bed. Two of the ? *obsoleta* were particularly well marked examples, and these two, together with a third less well marked, both possessed a quite distinct discal spot on the underside of each wing. The other three did not. An examination of the specimens of *M. obsoleta* in the collection of the British Entomological and Natural History Society revealed several which possessed such markings, some moderately distinct, and some less so. An examination the following day of the specimens in the A. W. Mera Collection at the Passmore Edwards Museum revealed that one moth in a series of 11 possessed these discal spots, the remainder being immaculate. Spurred on by memories of *pyramidea/berbera*, I examined the genitalia of the Mera specimen, and all six East Ham specimens. All were male, and all were *M. obsoleta*.

Clearly then, the possession of discal spots on the underwings does not serve to distinguish *M. straminea* from *M. obsoleta* although it is fair to say that I have not yet encountered a female *M. obsoleta* with these markings. — C. W. PLANT, Assistant Curator, Natural Sciences (Biology), Passmore Edwards Museum, Romford Road, Stratford, E15 4LZ.

BEMBECA CHRYSIDIFORMIS ESP.: A REJOINDER. — With great respect to Mr. Jacobs (*Ent. Rec.*, 95: 169), I feel I must point out that when writing of the Fiery Clearwing my actual words in question were "... long thought to be practically confined to Folkestone Warren". This, I submit, is hardly the same thing as a *statement* (Mr. Jacobs' term) that the species *is* practically so confined. My choice of words was deliberately cautious, since I was aware that it had occurred at other localities on the south coast, but apparently only casually (see however Chalmers-Hunt, *Ent. Rec.*, 95: 170). Nor was it meant to exclude the possibility that other colonies exist or existed undiscovered — A. A. ALLEN.

THE MONARCH BUTTERFLY IN 1983, SEEN FLYING IN FROM THE SEA. — On the 17th September 1983 at around 1pm, I saw a single Monarch (*Danaus plexippus* L.) at Burry Port Power Station on the Burry Inlet, Carmarthenshire. It flew in from a S. W. direction over the sea. My only previous sighting of this butterfly was in 1981 when aboard the M. V. Scillonian bound for the Scilly Isles, just off Land's End — it was flying over the sea at about 30ft. in an easterly direction. The date was 1st October 1981. — CLIVE JONES, 23 Cwm Terrace, Furnace, Llanelli, Dyfed SA15 4ELL.

NORTHWARD SPREAD OF TETHEA OCULARIS L. SSP. OCTOGESIMEA HBN.: FIGURE OF EIGHTY. — The first appearance of a male of this species, at my M.V. light here, on July 12th 1983, makes me wonder if this is the most northerly record to-date. Dr. Neville Birkett informs me that it appears to be the first for Westmorland, V.C.69. In the 1950s and 1960s, the late C. R. Haxby and myself, operated M.V. light traps consistently, in many parts of Yorkshire, and never saw the species. There is no mention of it in G. W. Porritt's "List of

Yorkshire Lepidoptera", but it is recorded in the latest "Yorkshire List of Lepidoptera" published by the Yorkshire Naturalist' Union (p. 7) as being well established in the extreme south of the County. Mr. S. M. Jackson, the Y.N.U. lepidoptera recorder, assures me that it is now widespread in Yorkshire.

There are several records of the species in Lancashire in recent years, the late Arthur Watson regularly used to get it in the late 1970s at his bedroom light, outside which was a big Black Poplar tree, where he was sure it was breeding. This was at St. Annes-on-Sea. Mr. J. Whitehouse of Dover Farm, Hoghton, nr. Preston has taken it at his M.V. trap, on three occasions, in the last two years, there also is Black Poplar. The nearest to Westmorland was one recorded by the Rev. J. J. Broadhurst in 1976, at his light at Bolton-le-sands, Morecambe Bay, just inside the Lancashire border. So perhaps it is no surprise at its occurrence here, especially as there is now a large Poplar (*Populus nigra variagata*) in a nearby garden. — J. BRIGGS, 5 Deepdale Close, Slackhead, Beetham, Cumbria LA7 7AY.

CORRECTION TO THE "CHECK LIST OF BREEDING BRITISH MACROLEPIDOPTERA". — Having used the Christmas break to catch up on back-reading, I noted that the second part of the above reported in *Ent. Rec.* 95: 157-160 omits *Electrophaes corylata* Thunb. from the list, the inclusion of which would result in the Geometridae totalling 281 species and an overall total of 726 species. — N. F. HEAL, Fosters, Detling Hill, Nr. Maidstone, Kent.

ACRONICTA RUMICIS L. (KNOTGRASS) FEEDING ON COTONEASTER BULLATUS. — The listed larval pabula of *Acrionicta rumicis* are various low growing plants such as plantains, docks and sorrels, as well as hawthorn, willow and bramble. It may be of interest therefore to note the discovery of a nearly full-fed *A. rumicis* larva on *Cotoneaster bullatus* var. *floribundus* in my garden at East Ham, Essex on 22nd September, 1983. — C. W. PLANT, Assistant Curator, Natural Sciences (Biology). Passmore Edwards Museum, Romford Road, Stratford, E15 4LZ.

ORTHONAMA OBSTIPATA F. (THE GEM) IN S.E. LONDON, 1983. — It appears that I should put on record the capture of two specimens of this immigrant here during June: a female on the 4th at the wall-lamp that I have already had occasion to mention more than once; and the remarkably dissimilar male at m.v. light on the 17th. Bretherton and Chalmers-Hunt (*Ent. Rec.*, 95: 145) show that there was a considerable invasion of the species in 1982, and include in their list a West Kent record (Orpington). — A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

ADOXOPHYES ORANA F.v.R. (LEP.: TORTRICIDAE) IN HAMPSHIRE. — Single specimens appeared in my m.v. trap here on the nights of 19th, 22nd and 23rd August 1983, the first record of this species in Hampshire. — Dr. J. R. LANGMAID, "Wilverley", 1 Dorrita Close, Southsea, Hants., PO4 0NY.

COLEOPHORA PRUNIFOLIAE DOETS IN WILTSHIRE. — During an unsuccessful search for the eggs of the brown hairstreak on his brother's farm near Trowbridge, Mr. M. W. Smith came across a number of small overwintering *Coleophora* cases fixed in the angle of twigs on blackthorn (*Prunus spinosa*). He sent four of these for my opinion, with permission for me to retain them. I identified them provisionally as *C. prunifoliae* and when the adults emerged (four females, all on the 12th of July), dissection confirmed the determination. This is a new county record and, I believe, the farthest inland that the species has hitherto been reported. In Essex it abounds in coastal localities such as Benfleet and although it also occurs up to 15 miles inland, it is then local and scarce. The other records known to me, from Cornwall, Devon and Sussex, are all coastal. Mr. Smith is therefore to be congratulated on this interesting record.

I based my determination of the cases on the length of their "necks". *C. prunifoliae* feeds for two or three weeks in the autumn and extends its case by adding rings of leaf epidermis to the oral end. Of the similar species, *C. cerasivorella* Packard hardly feeds at all before overwintering and the extension of its case does not occur until the spring. I am not sure about *C. coracipennella* (Huebner). Larvae found still in their mines on *Prunus*, which I believe to have been *C. coracipennella*, behaved like *C. cerasivorella* after excising their cases. Unfortunately they disappeared during the winter through escape or predation, so nothing is proved. If it can be established beyond doubt that *C. prunifoliae* is the only one to feed extensively in the autumn, this will provide the collector with a helpful means of recognition, especially as October is the best month to search for its cases. The early stages cannot be distinguished in the spring and the adults can be determined only by dissection.

It seems to be uncertain whether *C. cerasivorella* ever feeds on *Prunus spinosa*. It is tempting, but perhaps erroneous, to eliminate this species when cases are found on blackthorn. It would be helpful if anyone who knows the facts were to publish them. —

C. prunifoliae has been inadvertently omitted from the Addenda to the *Log Book* (see Hall-Smith, D. H., 1983. *A recorder's log book or label list of British butterflies and moths. Index:* p. 56). It should be included as no. 494a. — A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF. 4.ix.1983.

THE DEATH'S-HEAD HAWKMOTH IN CORNWALL. — I was pleased to take a fine specimen of *Acherontia atropos* L.: Death's-head Hawkmoth at Kynance Cove on the 30th August 1983 at m.v. light — R. COOK, 11 Greensome Drive, Ferndown, Dorset BH22 8BE.

Current Literature

Breeding the British Butterflies by **Peter W. Cribb**. 60pp., 5 b/w plates and 6 figures, wrappers. The Amateur Entomologist Vol. 18. 1983. Obtainable from AES Publications, 4 Steep Close, Orpington, Kent BR6 6DS, price £2.30 inclusive.

So far as we are aware, this is the first monograph to be published on breeding the British butterflies, and is based on the author's own very wide personal experience of the subject. An opening discussion on why breed butterflies? leads up to such matters as the preparation of foodplants; alternative foodplants; foodplants for butterfly adults; breeding cages; disease; hand-pairing techniques; breeding methods and techniques. Then follow details of breeding the species themselves — 63 different species of butterfly in all. The notes on these, like those in the rest of this booklet, are essentially practical and embody much useful information. An interesting list of references is provided indicating the particular species or subject matter referred to. — J. M. C.-H.

A Bibliography of the Entomology of the Smaller British Offshore Islands by **Kenneth G. V. Smith** and **Vera Smith**. Pp. xii + 115, 24 maps, stiff decorated cover. E. W. Classey Ltd., Faringdon, Oxon. 1983. £7.

Carefully compiled specialised bibliographies are by their very nature interesting, and this one with its detail and comprehensive treatment is especially so. The authors have aimed in this book at giving a complete list of references dealing wholly, or in part, with the entomology of these islands, though the Isle of Wight and Anglesey are not included in detail because "their faunas are largely an extension of those of the adjoining mainland". On the other hand, the Faroes, though not British, are included because "British entomologists have visited them and compared their fauna with that of the Shetlands".

The various islands are arranged under the following headings: (1) English Islands (Scilly Isles, Lundy etc.); (2) Isle of Man; (3) Channel Islands; (4) Welsh Islands (Skokholm, Bardsey etc.); (5) Scottish Islands (Clyde Isles, Hebrides etc.); (6) Irish Islands (Aran, Clare etc.); (7) Orkney Islands; (8) Fair Isle; (9) Shetland Islands; (10) Faroe Islands. The treatment of each island or group of islands includes a brief but adequate topographical description, accompanied by (except with the Faroe Islands) a small but clearly delineated map. Then follow the bibliographies, broadly speaking arranged to include first the more important general literature appropriate to each island or island group, then as far as possible, the complete list of references. Definitive lists are indicated by an asterisk. When the insect group is not indicated in the title, the Order is given in abbreviated form. The work concludes with an appendix containing a list of 63 bibliographical items concerning spiders. Printing and paper are excellent. — J. M. C.-H.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1983

By R. F. BRETHERTON* and J. M. CHALMERS-HUNT**

1983 was another year of abundance. Recorded numbers of many species exceed those of 1982; but some of this was partly due to successful local breeding from early arrivals during the long spell of warmth and drought in July and August, the results of which are hard to separate with confidence from primary immigrants. There were also a large number of probable or possible immigrants of resident species. These have been marked with a star in Appendix II. For the first time records from Guernsey, Channel Islands have been included. These are valuable not only for their own sake, but also for comparison with the pattern of those on the mainland.

The event which attracted most public interest was the abundance of *Colias crocea* Fourc. This has been covered by special inquiries which are reported in Appendix III. The species was certainly commoner than in any year since 1949, though its numbers did not approach the phenomenal total of 36,000 estimated for 1947. Of *C. hyale* L. or *C. australis* Verity, however, it is possible to accept as reasonably confirmed only some half dozen among the many probably erroneous reports based on misidentifications of *C. crocea* f. *helice*. Unfortunately no specimens are known to have been retained. There were also many sightings of *Danaus plexippus* L. scattered near the south coast from Scilly to Sussex and one in S. Wales, seven sightings of *Nymphalis antiopa* L. widely spread in date and place, and of single *Lampides boeticus* L. in Somerset and in Guernsey.

Among the scarce moths, over 40 records of *Mythimna loreyi* Dup. gave the highest annual number yet known. About 1,000 *Rhodometra sacraria* L. greatly exceeded those since the "great Vestal year", 1947. *Agrius convolvuli* L. with over 500 reported, probably had its best year since 1945. *Mythimna vitellina* Hbn. was again abundant in west Cornwall, possibly as a result of temporary establishment as well as large immigration, but was not unusually common elsewhere. Of *Heliothis armigera* Hbn. there are over 20 records, widely spread but very closely dated in late September, the most since at least 1950. *Diachrisia orichalcea* F., which has become less rare in recent years, scored ten, mostly near the coasts of West Sussex and Hampshire, and there were three examples of *Eublemma ostrina* Hbn. at Portland, Dorset in June. Other rarities, of which there were single captures were *Thaumetopeia processionea* L., only the second British record, trapped with a

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Lymantria dispar L. on 19 August at Mawnan Smith, West Cornwall; *Dysgonia algira* L., the third British example near Swanage, 23 September; *Cryphia raptricula* D. & S. at Dungeness, East Kent, 20 June; *Ochropleura fennica* Tauscher at Rugby, Warwicks, 14 August; and *Macdunnoughia confusa* Steph. at Dover, East Kent, 29 July and Stockton, Warwicks on 31 August. A specimen of *Hypena obsitalis* Treitschke had probably hibernated here after arriving in 1982; in the Channel Islands, where it is resident, it is frequently found in numbers in winter in such places. Finally, there was an addition to the British list: the Noctuid *Ochroleuca leucogaster* Fr. by J.T. Radford at Walberton, West Sussex, 17 October. This somewhat resembles *O. plecta*. It has been found on the west coast of France as far north as Morbihan, and may previously have been overlooked as an immigrant to the south coast of England.

The winter of 1982/3 was unusually mild, and this accounted for a number of early records which were probably of insects which had survived it. Thus a fresh *Heliothis peltigera* D. & S. which entered a house at Shevioc in East Cornwall on 26 January may have resulted from larvae which were widely found in the previous September and October. The probably hibernated example of *H. obsitalis* at Rye on 6 March has already been mentioned, and a single example of *Macroglossa stellatarum* L. seen at Brighton, Sussex on 4 April may have had a similar origin. There were also at least half a dozen sightings of *Vanessa atalanta* L. in January, March and early April which strongly suggest winter survival as adults or just possibly as pupae. There was, however, no long distance immigration such as sometimes occurs early in the year.

On 16 April, the mild weather gave place to a long spell of sub-normal temperatures, which lasted throughout May and in eastern England almost to the end of June. This greatly delayed the emergence of most resident species, and was presumably unfavourable to breeding by such immigrants as arrived in that period. The generally north west, north or north easterly winds were, however, broken several times by short spells of south west and later south or south east airs from the continent which favoured their arrival. Thus in the last few days of April south west winds brought a few *V. atalanta*, *Agrotis ipsilon* Hbn., *Nomophila noctuella* D. & S., *Autographa gamma* L., mainly to Sussex, and probably the first *Rhodometra sacraria* L. to Surrey; the commoner species arrived in larger numbers in mid May. From 3 to 6 June, with a south and south east air stream, there were interesting additions: the first thin but widespread influx of *C. crocea* and *Cynthia cardui* L., *Orthonama obstipata* F., *Spodoptera exigua* Hbn. and *Udea ferrugalis* Hbn. This was repeated in greater numbers in the middle of the month, with variety given by three *Eublemma ostrina* Hbn. at Portland, singles of *Acherontia atropos* L. in Cornwall, *Agrius convolvuli* L. in Furness, *C. raptricula* in

Kent, *M. vitellina* in Pembrokeshire, and *M. loreyi* in Sussex. Another influx in the last week brought many *C. crocea*, *V. atalanta*, *C. cardui*.

Through July and August south Britain and much of western Europe experienced a long series of anticyclones with drought and high temperatures both by day and by night. Winds were mainly northerly, but interspersed with gentle breezes from the south and south west, which were favourable to immigrants from these directions. In the middle of the month these were rather few, and appear from their species content to have originated mainly in north France or the Ardennes and western Germany, including several of our resident species such as *Autographa bractea* D. & S. and *Pelosisa muscerda* Hufn. A very large and varied immigration took place, however, on 24 July and succeeding days, headed by the first considerable wave of *R. sacraria*, many more *C. crocea* and *C. cardui*, two clearly newly arrived *N. polychloros*, several *Colias hyale* L. and the first *M. confusa*, as well as many more *S. exigua*, *O. obstipata*, and peak numbers of *A. gamma* in traps on the south coast. From that date onwards the separation of primary immigrants from the offspring of early arrivals whose development has been hastened by the hot weather becomes difficult. It is, however, clear that there was a remarkable influx in west Cornwall about 19 August, which produced the rarities *T. processionea* and *L. dispar* with other scarce immigrants and the first main waves of *A. convolvuli* and *M. vitellina* began to come in, though these reached their peak with a further burst of immigration which included the second *M. confusa* and *R. sacraria* in the last week of the month.

Over most of England the long warmth and drought ended abruptly in the last days of August. September and October were wet and variable, with successive depressions most of whose winds originated in the north Atlantic. The numbers of most immigrant species fell sharply, and are hard to interpret. There were large peaks of *A. gamma* and *N. noctuella* in coastal traps, and continued good numbers of *A. convolvuli*; but the rather few records of other species in the first three weeks probably resulted from local breeding. From 23 to 30 September there was a very large, widespread and varied influx which included at least a dozen of the scarcer species, with the only records of *D. algira*, *O. leucogaster*, all the *H. armigera*, most of the sightings of the first *Mythimna unipuncta* and apparently fresh waves of *R. sacraria*, *A. convolvuli* and *M. vitellina*; survivors of these accounted for many records in the first week of October. Some of these immigrants may have been more or less reinforced by local breeding from arrivals in July and August; but the general indication is of a massive movement from a long distance to the south or south west. Meteorological records confirm that some or all arrivals 22/26 September and 1/4 October could have come from Madeira or the Canary Islands. There

appears to have been no further considerable immigration in October, though records of the common species, especially of *V. atalanta*, *C. cardui* and *C. crocea* were fairly numerous throughout the month. The season effectively closed with an unusually warm first week in November, when *U. ferrugalis* and *O. obstipata* reached almost their highest numbers probably as a result of local breeding in their third or possibly fourth generations. A disappointing feature of the year was the apparent absence of any movement from Scandinavia to Scotland across the North Sea.

The butterflies had a good but not outstanding year, apart from the great abundance of *C. crocea*. The small invasion of *D. plexippus* clearly took place about 24 and 25 September, with probable survivors in Scilly in October, where some north American birds are said to have been present. The coincidence of date of the September invasion, with the arrival of so many other scarce immigrant species of clearly south western origin does, however, strongly suggest the Canary Island or the newly established colony in Madeira as more probable sources for the *D. plexippus*. The few sightings of *N. antiopa* are too scattered both in place and date to permit even tentative conclusions about their origin. *V. atalanta*, after the overwintering examples already mentioned, had small influxes until the middle of June, after which it shared in small numbers in all the later general immigrations, when several were seen to come in from the sea or were found in light traps. Its local breeding does not seem to have been outstanding, though it gave considerable results through October, with the last at Beatham, Westmorland on 5 November. A fine ab. *klemensiewiczzi* was caught at Gwithian, West Cornwall on 16 August (WGT, *Ent. Gaz.* 34:236). *C. cardui* L. showed a rather similar pattern, but with relatively larger immigrations in mid June and late July, and heavy local emergences throughout August. But there was poor penetration both inland and northwards, with only a single record on the Isle of Canna and only two in Orkney about 22 July, though over thirty larvae were found there on 16 August. October records were few, with the last on 22 October at Prawle, South Devon.

Among the scarce moths, the *M. loreyi* were mainly concentrated in West Cornwall between 19 August and 7 September, but there were records elsewhere both earlier and later. Local breeding or even establishment has been suggested for this species, as for *M. vitellina*, in West Cornwall. The absence of any June records of it there may well be due to lack of local observation at that time. It was found at Peacehaven, East Sussex on 17 June, and it may be significant that it recurred there on 12 and 20 September. But the finding of wild larvae of both these species is urgently needed for a proper understanding of their British status.

The pattern and timing of the huge abundance of *R. sacraria* requires some discussion. Over 1,000 were reported, nearly all at

light, from some 70 localities. These were mostly coastal and in the southern counties, but they reached up the east as far as Spurn Point and Scarborough in Yorkshire and in the west to Westmorland/Furness, with two examples at Gartlea, Dunbartonshire and two near Oban in Argyll and an unconfirmed report in the Isle of Mull. Inland it was numerous in Surrey and reached up the Midlands in strength to Warwickshire, with inland records in Wales in Brecknock as well as near the coast in Monmouth, Glamorgan and Pembrokeshire. In Ireland it has already been reported from cos. Dublin, Cork and Kerry. No larvae were reported anywhere.

After a few examples noted in April and in June, the first immigration began on 15 July and became considerable in the last week; with overlap into the first week of August about 30 were recorded, mostly in Hampshire and West Sussex. There was a wider and larger influx in the latter part of August, and scattered single records through mid September which may have represented offspring of the July arrivals; but the total for the year did not exceed 160 by 22 September. The climax was then very sudden: between then and 30 September there are dated records of about 700, with a further 100 in the first week of October, the last two being caught on 19 October and 9 November at Bradwell-on-Sea, Essex. This sudden abundance was at first thought to be due to massive local breeding such as took place in 1947 in stubble fields. But its extreme concentration in date, along with many other immigrants, its very wide geographical distribution, and the very small numbers found by day, together suggest very strongly that its main cause was a huge immigration which reached its height on 26 and 27 September, though local breeding may have made some contribution in some places where, as particularly near the south coast, the species had been seen in numbers in late July and August.

The story of *A. convolvuli* differs in several respects. The first was noted surprisingly far north in Westmorland/Furness on 17 June, and the second half of July there were single records in West Cornwall, Dorset and of two in East Kent. A larva found at Woodnesbury E. Kent, on 23 August and three pupae on 3 and 9 September at Otterton, S. Devon, presumably resulted from this small immigration and gave clear indication of potential local breeding. This probably contributed to the regularity of the recorded sightings, which from 15 August to well into October were almost daily and in numbers. A large proportion were seen at *Nicotiana* blossoms in the same places on successive nights and some at rest by day, so that the recorded total of about 500 may have considerable double-counting; in Lincolnshire, however eight caught singly at light near a bed of *Nicotiana* were released and none were recaptured, having presumably moved elsewhere. Eggs were found on *Convolvulus arvensis* in Cornwall in late August, and a last instar larva at Drifffield, York-

shire on 19 September, so that some of the October adults may also have been bred locally.

The range was very wide. The species was clearly most abundant in Cornwall, Devon and Sussex, but it was seen, sometimes in numbers, near the east coast to Yorkshire and up the west of Caernarvon and Furness and in seven English vice-counties; in Scotland one was found on a ship which moved among the Orkney islands, and nine were reported in various islands of Shetland. We have records from five Irish counties, and one of particular interest from the oceanographic research ship "Challenger", on which one *A. convolvuli* was caught 24 September and two on 26 September after flying round the rigging at 9.30 hrs. 100/150 miles south west of Mizen Head. These provide a direct proof that when on migration the species flies in day light.

There were distinct and probably migratory peaks corresponding with those of other immigrants in the last weeks of August and September and apparently coming from the south and south west; but the records in Lincolnshire, Yorkshire, and Shetland were most, though not all, in early September and may reflect a separate flow of immigrants from the east or south east. There is at present no information available about the migratory pattern on the Continent.

The common immigrant moths were all more numerous than usual, though estimates of totals covered by the often generalised reports cannot be attempted. *N. noctuella*, *A. ipsilon*, *A. gamma*, and *P. xylostella* all began to arrive in small numbers in late April and early May, and they were joined by *U. ferrugalis* in early June; but they were widely reported as being scarcer than usual until the large general immigration in the last week of July. Light traps near the south and east coasts showed their highest peaks mostly in the third week of August and later, the largest being 1590 *A. gamma* trapped on Achill Island on 19 August, 1160 *A. gamma* and 110 *A. ipsilon* at Portland on 23 August, and 220 *N. noctuella* at Fountainstown, co. Cork on 5 September; all these also shared in smaller numbers in the large immigration at the end of September. Between these influxes almost continuous records were provided in many places by survivors and by offspring of earlier immigrants. Records inland were much smaller but more even in numbers; they may have included a higher proportion of locally bred examples, particularly of *A. gamma*. *U. ferrugalis*, however, was reported only at the time of the immigrations and seems to have been most numerous as late as September, and again in early November. All species reached as far north as Orkney, except *U. ferrugalis*, of which the northernmost record received is of a single from Dunbartonshire. The diurnal *M. stellatarum* with some 300 reported was also very widespread and there were also many records of its larvae.

The number of recorders has again increased considerably, and we warmly thank all those who have contributed, whether directly,

or indirectly through county or other collective reports. The general coverage of the country has much improved, though it is still uneven. We should particularly welcome more information from regular light traps recording in West Cornwall, which is probably the most important point of arrivals for many immigrants, from inland localities generally, and from Scotland and Ireland. We also thank Mr. P. A. Davey for his help on meteorological probabilities for arrivals of immigrants during September and October.

(To be continued)

COPPER UNDERWINGS *AMPHIPYRA PYRAMIDEA* L. AND *A. BERBERA SVENSSONI* FLETCHER IN BEDFORDSHIRE. — From the literature I see it is 16 years since it was recognised that two separate species of Copper Underwing exist in this country. This year I attempted for the first time to separate them using the characteristic differences in the undersides described by Goater and Christie (in *Ent. Gaz.* Vol. 20). I feel my observations may be of interest at least to those, who like me, have never tried to determine which of the two species they have seen.

Copper Underwings can be very numerous at sugar and the first site I sugared produced around 100 to 150 a night in late August. My first samples of the smartest, freshest looking moths, when examined at home, showed no differences, and all matched the characteristics of *Amphipyra pyramidea* L. Only when I started taking the dull, dowdy looking moths, was *A. berbera svenssoni* Fletcher revealed to me. After that it all seemed easy! Having got a "feel" for the two species it seemed that torchlight enhanced the differences and I was able, with a high degree of success to tell the two apart from the upperside appearances alone — on the spot, at the sugar patch.

A. pyramidea appears a much more handsome and contrasty moth than *A. berbera*, presenting a very "black and white" appearance in the beam of a torch, whilst *A. berbera* appears drab and exhibits little contrast.

At the first site the ratio of *pyramidea* to *berbera* was in the order of 7:3 but at a second Bedfordshire location the situation was reversed with *berbera* being the more numerous, again at about 7:3. Both species are obviously very common in Bedfordshire. — K. F. WEBB, 2 Kingsdown Avenue, Luton, Beds LU2 7BU.

SESIA BEMBECEIFORMIS HBN.: LUNAR HORNET MOTH IN BEDFORDSHIRE. — On 26 December 1983 whilst cleaning out a cage, I discovered a specimen of this moth, which I had missed at the time of emergence. The insect was reared from a section of a 60mm. diameter sawn trunk and was taken from a small colony I had found in South Bedfordshire. This is apparently the first recorded *S. bembeciformis* for Bedfordshire since Victorian times. — K. F. WEBB, 2 Kingsdown Avenue, Luton, Beds.

SARDINIA, 14TH-20TH MAY 1983

By ALEX RIEMIS*

The main purpose of my trip to Sardinia was to gather more information about the presence and location of *Pseudophilotes barbagiae* De Prins & Van der Poorten, a species discovered in small numbers by Dirk Van der Poorten and Jos Dils on the 28th of May 1981. Accordingly, on the 14th of May, I left the car ferry at Porto-Torres under a bright sky, aiming for the Monti del Gennargentu, and was soon struck by the presence of big yellow umbelliferous plants, sometimes measuring as much as two metres tall. These turned out to be *Ferula communis* L., one of the foodplants of *Papilio hospiton* L., and a plant which occurs locally in abundance. Having already noticed some *Papilio* species, I stopped at what seemed an interesting place in the Bonorva area, but found that these were all *P. machaon*, though I also noticed there specimens of *Euchloe insularis* Stdgr. and *Pontia daplidice* L. I made a second stop near Ottana, where a rather humid valley seemed interesting, finding there *E. insularis*, *Lasiommata megera paramegera* Hbn. and hibernated examples of *Gonepteryx rhamni* L. and *G. cleopatra* L.

That same afternoon I made an initial excursion to the Monti del Gennargentu. Approximately south of Fonni lies a small moist valley where, amid a poor, dry landscape I was very fortunate almost immediately to encounter the first specimens of the desired *P. barbagiae*. How inconspicuous this butterfly is! Both the male as well as the female are completely brown on the uppersides, though some males still show a slight trace of blue in the basal area. The insect is also very difficult to follow when flying, the flight being similar to that of the Grecian *Freyeria trochylus* Freyer. I also found there *Spialia sertorius theraphne* Rambur, *Pyrgus armoricanus* Obert. and, in the shadow of some bushes, some very fresh males of *Maniola nurag* Ghiliani.

After the success of this first day, I drove further south as far as Lanusei, remaining there for a few days as the place seemed well situated for exploring the area. I spent all next day in this district, first visiting the valley of the Rio Pardu, where *Leptidea sinapis* L. and *Pararge aegeria* L. were common, and where the latter exhibited very conspicuous purple markings on the underside of the hindwings. I also found there a specimen of *Aglais urticae ichnusa* Bonelli.

Nearby is a very interesting habitat, because one of the villages is built on an extensive hillside, and the *Papilio* which flies there is *P. hospiton*; indeed, the butterfly was even flying in the streets! Having once had *hospiton* in the net, one can distinguish it from

*Rerum Novarumlann 41, B-2300, Turnhout, Belgium.

machaon when in flight. *Machaon* has a graceful flight, whereas *hospiton* flies in a somewhat wild and turbulent manner rather reminiscent of that of *P. alexanor* Esper. The contrasting black and yellow markings are also much finer and more conspicuous in *hospiton* than they are in *machaon*. In this locality there also flew hundreds of *Zygaena corsica sardiniensis* Hol. as well as numerous *L. megera paramegera*. Near Seui, I found the only specimen of *Anthocharis cardamines* L. and one male *M. nurag*.

The 16th of May I visited the eastern part of the Monti del Gennargentu, where there are extensive territories overgrown with lavender and thyme, and there in the very dry places *P. barbagiae* is locally very numerous. Later I discovered that this butterfly is easily found by searching the lavender bushes in the late afternoon when, together with other Lycaenidae, they sit with closed wings on the flower-buds, and one can select required specimens with a pair of forceps. I also noticed there many *M. nurag*, *Lycaena phlaeas* L., *Coenonympha pamphilus lyllus* Esper, one female *C. corinna* Hbn. and numerous *Aricia cramera* Eschscholtz. Incidentally, until recently it was generally believed that *A. agestis* occurred in Sardinia (cf. Higgins & Riley, 1980). However, Balleto and Toso (1981) examined specimens from about 120 different places in Sardinia, all of which they found to be referable to *A. cramera*, so in fact *agestis* may not exist there.

While sitting on the bank of the Rio Calaresu which flows through the Monti del Gennargentu, a large butterfly flew my way which I recognised as *Danaus chrysippus* L. Although it flew uphill slowly, it always managed to stay just out of reach, so it was a great pity I was unable to take what appears to have been the first of this species to have been seen in Sardinia, and one that has shown a remarkable increase in range over the past few years. After the experiences of that day and those of the 14th, I reflected on the fact that *barbagiae* occurs almost everywhere in the eastern part of the Monti del Gennargentu at an average altitude of 800 metres, particularly in very dry sandy uncultivated areas amid lavender, and in such places was locally common. But I very seldom found the butterfly in areas of grass and mixed vegetation. Although the butterfly is so inconspicuous, I can hardly understand how it is this species has remained unrecognised for so long. Only rarely is there any mention in the literature of *P. baton* in Sardinia, and only once have I come across any mention of *P. abencerragus* as occurring there, so that one suspects that both species are unrepresented in Sardinia and the records of them for there should refer to the newly described *P. barbagiae*. The characteristic features as described by De Prins and Van der Poorten are very constant, and nowhere did I find specimens reminiscent of *P. baton* with more or less blue dusting. Together with *M. nurag*, *P. barbagiae* is now the second endemic butterfly in Sardinia.

I spent the next two days west of Lanusei, which district is mainly agricultural. Nevertheless, there are several interesting humid valleys there, and between Ierzu and Bari, I found *Liminitis reducta* Stdgr., *Celastrina argiolus* L., *Maniola jurtina hispulla* Esper and both hibernated and fresh specimens of *G. cleopatra*. In a valley near Tortoli flew *P. hospiton* and *P. machaon*, and I also saw there a fresh specimen of *E. insularis* (one of a second generation?). On the 19th of May, I visited the higher situated and better known places of the Monti del Gennargentu, that is the area about Desulo, Aritzo and Tonara, which unlike that of Lanusei, is very wooded. The little villages are very interesting for the traditional clothes of the people, but the butterflies were rather disappointing, the most notable being a specimen of *A. urticae ichtnusa*, though I also noticed there *P. machaon* and *L. reducta*. Undoubtedly this region would be more interesting later in the year.

My last day in Sardinia, the 20th, I returned to Porto Torres and visited the Bonorva locality where I had been the first day of my trip. *M. nurag* was there in amazing numbers, all males not withstanding the species appears to fly earlier than is stated in the literature. Also there, were *M. jurtina hispulla*, *P. icarus* Rott. and a fair number of *S. sertorius theraphne* Rambur. Although the latter is an endemic subspecies in Corsica and Sardinia, in Corsica one finds both *S.s.sertorius* and *S.s.theraphne*. By definition, two subspecies cannot occur together, so it is perhaps safer to regard *S.s.theraphne* as a good species.

Regretfully I drove on to Porto Torres, and so ended a beautiful and interesting stay in Sardinia. The impressions and memories will remain of not only a successful entomological visit, but also of the generous hospitality and kindness of the Sardinians.

Butterfly species noted in Sardinia

P. machaon L., *P. hospiton* Guenée, *Pieris rapae* L., *P. brassicae* L., *Pontia daplidice*, *Euchloe insularis* Stdgr., *Anthocharis cardamines* L., *Colias crocea* Geoff., *Gonepteryx rhamni* L., *G. cleopatra* L., *Leptidea sinapis* L., *Danaus chrysippus* L., *Limnitis reducta* Stdgr., *Inachis io* L., *Vanessa atalanta* L., *Cynthia cardui* L., *Aglais urticae ichtnusa* Bonelli, *Maniola jurtina hispulla* Esper, *M. nurag* Ghiliani, *Coenonympha pamphilus lyllus* Esper, *C. corinna* Hbn., *Pararge aegeria* L., *Lasiommata megera paramegera* Hbn., *Callophrys rubi* L., *Lycaena phlaeas* L., *Celastrina argiolus* L., *Pseudophilotes barbagiae* De Prins & van der Poorten, *Aricia cramera* Eschsholtz, *Polyommatus icarus* Rott., *Pyrgus armoricanus* Oberthur, *Carcharodes alceae* Esper, *Spialia sertorius theraphne* Rambur.

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THE OCCURRENCE OF A HAWK MOTH, *MANDUCA RUSTICA* (FAB.) IN ABERDEEN. — On 22 September 1983 I was brought a live, but damaged, specimen of *Manduca rustica* (Fab.), which had just been found on a pavement in the dock area of Aberdeen, apparently having been struck by a car. It subsequently died and has now been given to the Royal Scottish Museum, Edinburgh.

It was identified in consultation with E. C. Pelham-Clinton, to whom I am most grateful, and he then took it to the British Museum (Natural History) where A. Hayes confirmed the identity. *M. rustica* is a variable species, with several geographic subspecies, and there is some doubt as to which of these this specimen belongs. It may be *M. r. rustica*, which occurs on the southern mainland of U.S.A. or, perhaps more likely, a subspecies from the Caribbean or from north-east South America. With only one specimen it is not possible to be more precise. Stray insects often reach Aberdeen docks in shipments from abroad, especially of fruit, and it seems probable that this specimen travelled in this way. As far as is known no-one was breeding or keeping exotic Lepidoptera in this area at that time but since large hawk moths are popular insects it can't be discounted that it had been bred and released. — MARK YOUNG, Department of Zoology, Aberdeen University, Tillydrone Avenue, Aberdeen AB9 2TN.

ISSORIA LATHONIA L.:
A KENTISH QUEEN OF SPAIN

By CHRIS SAMSON*

The Queen of Spain Fritillary, *Issoria lathonia* L., ranges through the Palaearctic from western Europe, Himalaya to western China; with affinities in montane areas of Africa and South America. It is a notable migrant, although of very infrequent occurrence on our shores. Due to this factor and its undoubted aesthetic charm, a sighting of this butterfly on the wing in green English pastures will always be a foremost ambition of any field-lepidopterist, young or old. Sadly, this experience is seldom fulfilled; however, a regular field-trip one warm summer day was to prove most irregular for Nicholas Hodges, a knowledgeable young naturalist, well versed in the wildlife of Dover and its environs.

The reward came in mid. July of 1979 during a somewhat weary trek, ascending the picturesque chalk downs above Temple Ewell, north-west of Dover. Second-brood *Lasiommata megera* L. predominated along Beech woodland and Blackthorn scrub, bordering the exposed downland. Indeed, it was the abundance of these fresh Wall Browns that nearly led Nicholas Hodges to dismiss his Queen of Spain as one of the above Satyrids. He was thus favourably surprised on closer inspection: a fine large female, with silver ventral spots gleaming in the sunlight. This specimen, kindly donated to the former Saruman Museum of Beckley E. Sussex, is now in the famous Smart Collection, until recently housed in the National Butterfly Museum, Bramber, W. Sussex.

The Hodges *lathonia* is not only the most recent capture for that species represented in the above collection, but also our most recent Kentish record, the last example having been taken in 1964 or 1965 at Langdon Bay, Dover (Chalmers-Hunt 1980).

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MACROGLOSSUM STELLATARUM L. IN APRIL. — MIGRANT OR HIBERNATOR? — At about midday on 8th April 1984 in Eastbourne, I noted a single Hummingbird Hawkmoth hovering about garden blooms. I have neither seen nor heard of any other migrant species so far this year, so wonder if this may be a hibernated example. — M. PARSONS, The Forge, Russells Green, Ninfield, nr. Battle, E. Sussex.

A NAME CHANGE IN THE GENUS *CALYBITES*
HÜBNER (LEP.: GRACILLARIIDAE)

By A. M. EMMET*

Gracilaria hauderi Rebel, 1906 was named from moths taken at Kirschdorf in Upper Austria. According to Hering (1957), it has never been recorded from any other country. Two years later *Gracilaria pyrenaeella* Chrétien, 1908 was named from moths reared from larvae collected at Nay in the western Pyrenees; the only other known locality is the Isle of Wight (Ford, 1933), where the colony persists (Langmaid, 1982). Hering (*loc. cit.*), writing of the early stages, separates the two solely on a difference in foodplant, sycamore (*Acer pseudoplatanus*) for *Calybites hauderi* and field maple (*A. campestre*) for *C. pyrenaeella*. Such a basis for specific distinction is of doubtful validity; for example, *Caloptilia rufipennella* (Hübner) has been found only on sycamore in Britain but feeds on various species of *Acer* on the Continent (Hering, *loc. cit.*).

Leraut (1983) states that he has examined the genitalia of the type specimens of *C. hauderi* and *C. pyrenaeella* and finds them to be conspecific; *hauderi*, as the senior name, must be taken into use. The first syllable is pronounced like the "ow" in howl.

It is probable that the distribution of *C. hauderi* is imperfectly known, since it is unreasonable to suppose that it occurs in only three localities, all separated by over 500 miles. It may be a species which thrives in small colonies where it tends to be overlooked because of the similarity of the larval feeding to that of related species of the Gracillariidae.

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ADDITIONAL RECORDS OF *EUCHROMIUS OCELLEA*
(HAWORTH) (LEP.: PYRALIDAE) IN BRITAIN

By BERNARD SKINNER*

Following the publication of my article on the history of *Euchromius ocella* in Britain (Skinner 1982) my attention has been drawn to two additional records; one which I had overlooked, the other unpublished. They are:

Two specimens captured at Silloth, Cumberland on 27 June 1885 by C. Eales (Day 1901 and Routledge 1928).

One, at m.v.l., at Welcombe, North Devon on 1 July 1968 by Dr. T. N. D. Peet (Peet, pers. comm.).

In addition to these a specimen was reported at m.v.l. at Ashton Common, near Trowbridge, Wiltshire on 7 October 1982 by G. Smith (Smith 1983) bringing the total number recorded in Britain to twenty-nine.

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A SECOND BRITISH LOCALITY FOR PHYLLOCNISTIS XENIA HERING. — Pausing to examine some roadside *Populus canescens* on the fringe of marshland near Canterbury, Kent on 13.viii.1982, I was delighted to find a few mines of this species, the larvae of which had already formed cocoons and which subsequently produced adults between 16.viii. and 20.viii.1982. This record provides only the second known British locality and is some 17 miles distant from the locality where it was first discovered in 1974 by Mr. E. C. Pelham-Clinton (*Ent. Rec.* 88 (1976): 161-164), and is possible evidence of a westward spread.

This is a very small colony severely restricted by virtue of being supported by only a single very large tree and a few yards of vegetative saplings. The precise location is therefore being withheld until further information becomes available regarding its present status, as it is a Red Data Book endangered species. — N. F. HEAL, Fosters, Detling Hill, Nr. Maidstone, Kent.

THE EFFECT OF ANT ASSOCIATION ON LYCAENID LARVAL DURATION (LEPIDOPTERA: LYCAENIDAE)

By S. F. HENNING*

Abstract

Recent studies on Southern African Lycaenidae have shown that the duration of the larval stages is significantly increased in myrmecophilous species when compared to non myrmecophilous ones. Several examples are discussed and it is suggested that the extended duration of the larval stages is an adaptation to life within an ants' nest.

Introduction

During recent studies (Henning 1983a, 1983b) on the ant association of certain lycaenid larvae a striking difference was noted between the dependent myrmecophilous species and those not ant associated. This difference is in the duration of the larval stages. The larval stages of *Euchrysops dolorosa* (Trimen), not known to be ant associated, only lasted a total of 19 days, while those of *Aloeides dentatis dentatis* (Swierstra), an ant associated species, may last six months or even a year if diapause takes place. In *Lepidochrysops ignota* (Trimen), another myrmecophilous species studied, the larval stages lasted some 10-11 months.

To explain the above differences in the duration of the larval stages is most difficult because such factors as size, weight, type of food, dependence on ants and so on, all have to be taken into consideration. To discover whether the dependence on ants has anything to do with the duration of the instars one would have to eliminate some of the other possible influencing factors. To do this one would need to select closely related species of similar size feeding on the same foodplant at the same time of the year at the same locality, with the only major difference being their dependency on ants.

Evidence

Euchrysops dolorosa and *Lepidochrysops ignota* appear to fill the above requirements. These two species belong to closely related genera, are about the same size and feed on the flowers of *Becium obovatum* (Benth.) N.E.Br. (Labiatae) during the months September to November at Witpoortjie in the Transvaal. The only major dif-

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ferences between them is that from the third instar onwards *L. ignota* becomes carnivorous and dependent on the ant, *Camponotus niveosetosus* Mayr. The duration of the larval stages differ considerably, that of *E. dolorosa* lasting a total of 19 days and that of *L. ignota* 10-11 months. The duration of the first two instars of *L. ignota*, while they are feeding on the flowers of *B. obovatum*, is equivalent to those of *E. dolorosa*, lasting 8 days. Thus it appears that it is from the 3rd instar onward, when *L. ignota* becomes carnivorous and dependent on its host ant, that factors influencing the duration of instars come into play. Before discussing the implications of this let us look at another example.

Another two species that fill the requirements mentioned above are *Aloeides trimeni* Tite and Dickson and *Aloeides dentatis*. These two species are closely related, belonging to the same genus, they are the same size and feed on the leaves of the plant *Hermania depressa* N.E.Br. (Sterculiaceae) during the months September to January at Witpoortjie in the Transvaal. The only major difference between them is that the larvae of *A. dentatis* shelter during the day in the nest of their host ant, *Acantholepis capensis* Mayr, while the larvae of *A. trimeni* never leave the foodplant. The duration of the larval stages of these two species differs considerably, that of *A. trimeni* lasting some 3 months, and that of *A. dentatis*, which is dependent on ants, lasting 6-12 months.

Discussion

The above two examples suggest that there may be some correlation between dependence on ants and the duration of the larval stages. Change in diet does not appear to be a major factor as *A. dentatis* feeds on the same plant throughout its larval stage as does *A. trimeni*. To check that the above observations were not atypical a survey of the literature was made. The most important works consulted were those of Clark and Dickson (1971), Jackson (1937), Hinton (1951), Lamborn (1914) and Farquharson (1922). All these authors described the lycaenid life histories in great detail so that all possible factors influencing the duration of the instars could be taken into consideration. From this literature survey it does appear that lycaenids associated with ants tend to have a much longer larval period than those not dependent on them.

The larval stages of the subfamily Theclinae not dependent on ants have four or five instars lasting some 20-40 days. The exception is the tribe Aphaeini, which are nearly all dependent on ants, and have relatively long larval stages, lasting from 3-6 months or even more, passing through some six instars. The Lycaeninae which are not dependent on ants have four or five instars lasting some 18-45 days. In the Polyommatainae there are four or five instars and those species not dependent on ants have larval stages lasting only 18-40

days, but in the *Lepidochrysops*, which are dependent on ants, the larval stages last some 10-11 months.

One notable exception is the genus *Capys* (Theclinae). During spring and summer *Capys alphaeus* (Cramer), for example, has a larval stage of about 38 days, but towards the end of summer the final instar does not pupate but goes into diapause. They remain in diapause over the cold winter months finally pupating in spring without feeding again. The species of this genus differ from those of other non dependent myrmecophilous ones in that the larval stages occur within a protea flower head. The larva is relatively well protected in a chamber eaten out of the base of the flower head. Thus it occurs in conditions simulating those of an ant's nest. These larvae are occasionally attended by ants but are not dependent on them.

I think it can be assumed that the ant associated species evolved from free living forms. If this is the case it appears that it is possibly the relaxation of certain selective pressures caused by the presence of the ants that has resulted in the longer larval period. Most authors seem to agree that the presence of the ants afford the lycaenid larvae some protection from predation and parasitism. It is possibly this protection that led to the increased duration of the larval stages of ant associated species.

The increased larval period in some ant associated lycaenid species is due to the fact that the larvae will undergo diapause when food becomes scarce. Some larvae, even if on the verge of pupation, will undergo diapause if the conditions become unfavourable. Only with the return of favourable conditions will they pupate. This ability to undergo diapause and remain in the larval stage for considerable periods of time appears to be an adaptation to life within an ants' nest. If the ants happened to move their nest for some reason the lycaenid caterpillars can follow or be carried while pupae would be left behind. Claassens and Dickson (1977) found that lifting stones while searching for *Aloeides thyra* (L.) larvae often led to the ants deserting their nests and leaving the lycaenid pupae behind. These pupae would be in danger in the deserted nest as the tunnels and exit holes may become filled without the ant's constant maintenance, thus newly emerged adults may not be able to leave the nest. Claassens and Dickson (1977) found that the larvae of *A. thyra* would follow their host ant, *Acantholepis capensis*, if they deserted their nest.

It would appear from the above that some lycaenid larvae may have even developed slightly more extended larval stages as an adaptation to life within an ants' nest. The whole question of life history strategies is a complex story and only a thorough ecological study would provide the necessary evidence to identify the selection pressures which could have affected the early stages of the lycaenids.

Acknowledgements

I would like to thank my wife Mercedes Henning, my father Bill Henning and my brother Graham Henning for reading the manuscript.

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THE BRIGHT WAVE: IDEA OCHRATA SCOP. IN HERTFORDSHIRE.

— A female of this very local moth was caught in one of our Harpenden light traps (Allotments, Site 34, O.S. Grid Ref. TL 134 134) on the night of 19/20 July 1983, and was determined by examination of the genitalia. Although this species is not known to be migratory, this individual had probably travelled from one of its coastal breeding grounds, since it is most unusual to find it inland. The exceptionally intense migratory activity by many species during part of last year would support this view. I am indebted to Mr. B. Skinner for helpful comments on the distribution and status of *I. ochrata*. — A. M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Hertfordshire.

LOOKING BACK : REFLECTIONS OF A
QUONDAM COLEOPTERIST

By R. R. UTHOFF-KAUFMANN, M.S.B.E.*

Once an entomologist always an insect hunter. I caught the entomological 'bug' (if so blatant a tautology be permitted) as a young teenager. It all began with shell collecting along the *littoral* during a long stay on the Belgian coast in 1924-26; then I moved on to Switzerland — the fauna was prolific at 1100-1200 metres altitude in the lower Alps. I remember the jam jars and bottles filled with wall and green lizards, slowworms, salamanders and snakes, topped up with *alcool à brûler*, the badly-blown birds' eggs, insects of many orders pierced with thick pins from penny packets.

One day, however, a friend brought me an Elaterid, dull brown, with tufted pubescent patches of iridescent gold; on another occasion he arrived with a torpid *Procrustes coriaceus*, found under a snow-covered boulder: these beetles changed my collecting habits. Out went the discoloured reptiles, the oological relics, the Hemi-Homoptera, dragon flies and badly-sprung Lepidoptera. I wrote off for 10/-'s worth — a large sum for a schoolboy in those days — per 100 beetles from that most reliable firm, Watkins and Doncaster of the Strand, long since moved; Mr. Frederick Mett  wrote such polite and encouraging letters to youngsters. His catalogue was a treasure-house and joy to read. Of course, the beetles were not named nor labelled but the selection was catholic and included a *Carabus nitens* L.

Next, I persuaded my parents to send out a copy of Rev. C. A. Hall's *Common British Beetles* and later, W. E. Sharp's *Beetles of our Countryside* (1/6d. from Selfridge's bargain book counter.) Coleopteromania had taken off! I came back to England with hundreds of beetles in cork-lined cigar boxes, still badly pinned or seccotined to strips of postcard; at least they were locality-labelled and I kept a detailed record book of captures. I was learning; my first venture into print, *Quelques Insectes de Leysin et de ses Environs*, had already appeared in the local newspaper in 1930. My insect boxes were viewed with some suspicion by Customs and Excise at Dover when I returned home in 1931. They were doubtless looking out for the pernicious Colorado beetle.

Where the Coleoptera were concerned my working life seems to have been divided into four parts.

I recall being gently quizzed by Sir Gavin de Beer about my aspirations when I first presented my student's ticket at the Natural History Museum, South Kensington, before being passed on to Dr. K. G. Blair (whose interest in my work over the years was un-failing) and the almost limitless collections in the basement of the

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Department of Entomology — I was temporarily studying the British Scarabaeidae; the rest was yet to come. I had begun to specialize.

In the early 'thirties I prepared a typescript monograph, *De Carabis*, illustrated, 332 pages long, neatly bound in printed boards: it got no further, though I have it to this day. One of my children, years ago, had obviously found the volume, plastering its pages with scribbled comments, such as (referring to *Carabus depressus* Bonelli, v. *intermedius* Heer: Heer, *Kaefer Schweiz.*, II:25. Switzerland),

“55 Not very good.”
100

This merits an up-to-date comment because in September 1983, my wife in tidying a rosebed in my son's garden at Middle Old Park, Farnham, Surrey, called out to me,

“I've just caught a big beetle for you.”

“Where is it?”

“I put it in the finger of my gardening glove.”

Out came the entomological forceps, kept permanently on my person, and I hauled into view an example of *Carabus monilis* F.: what a pleasure! The last time I had seen one was over half-a-century ago in Finchley, N.3. and another in a carrion trap in July 1936 (4). In passing I add that *Carabus granulatus* L. was commonly running around the grounds at Jodrell Hall (Terra Nova School), Cheshire, up to 1972. I had also fished out of the school swimming pool on more than one occasion *Cychnus rostratus* L., *Serica brunnea* L. and a *Leipus nebulosus* L. in 1970.

There followed a three year investigation on necrophagous Coleoptera, culminating in a long paper, published in 1941 (4).

Then I turned to the water beetles. There was a series of papers, with one exception (3), to be found in the pages of the *Entomologist's monthly Magazine*, 1938-43. I remember, with chagrin at the time, showing my collection to the Keeper of Entomology, B.M.N.H., and his pointing instantly to an example of *Hydroporus melanarius* Sturm mixed up with a number of *H. memnonius* Nic. How could I have made so stupid a mis-identification!

For a while in the 'forties, academic preoccupations intervened, and it was resolved, with the publication of (5), without much fervour to give up beetles: but the lure was irresistible; *Coleoptera*, *Cerambycidae* fascinated me. The cycle of research, hunting and collecting, travelling and recording had recommenced. In 1949, on a refresher course at Oxford University, all my spare time was spent in the Hope Department of Entomology going through their material. I experienced a certain wry satisfaction in re-determining a specimen of *Stenocorus meridianus* L. lying amid a run of *Rhagium bifasciatum* F. in Commander J. J. Walker's collection of Coleoptera. That year, too, R. W. Lloyd and I spent a day collecting

LOOKING BACK: REFLECTIONS OF A QUONDAM COLEOPTERIST 105
in Delamere Forest, Cheshire, hunting particularly for *Saperda scalaris* L., of which we found many larvae, pupae and a dead imago. I remember admiring Mr. Lloyd's mobility and agility in clambering over gates and fencing, despite his artificial limb — he had had his accident climbing in the Himalayas in his youth. On our drive to Delamere he handed me a small pocket storebox.

"I brought this present for you," he said. "Walter, my chauffeur, beat a number off pine¹ branches for me in Moccas Park, Herefordshire, a year or so ago."

He made no further comment, so I opened the box. It contained to my amazement a neatly-ticketed *Pyrrhidium sanguineum* L. I thought back to my papers (6, 7) and wondered.

I had lamented in 1947 my failure to trace *Judolia cerambyciformis* Schrank (8), last heard of in 1917 (2); four years later in July I found one morning a dead specimen caught in a spider's web in my outhouse at Jodrell Hall; nor was that all: in July 1952 two live examples were seen on *Heracleum* in the school grounds; nor was that all. On July 13th, 1952, at dusk on a very humid and sultry evening, a *Prionus coriarius* L. flew through the lighted open windows of our sitting room, so confirming an old Cheshire record and my comments in (8, 9).

Reluctantly I finally ended my work on the British Longhorn beetles; to complete the break I avoided writing a note on the above occurrences. It is now, after thirty-five years' silence, that I make these observations, hoping that they may yet be of interest to current observers. I have my beating tray, fifty years old, its calico (if stained) as good as new. In June 1982 I unearthed it to see if anything was about on the hawthorns down our lane; indeed, yes: the ubiquitous *Grammoptera ruficornis* F., inexplicably omitted from Linssen's (1959) *Beetles of the British Isles*; in June 1983 — the May trees were again very late in blossom this year — it was around in fewer numbers. The only other Longicorn noticed since our retirement to Great Dunmow, Essex was a *Clytus arietis* L. on a windowsill.

In the last decade here, Coleoptera have been few and far between: a *Pyrochroa coccinea* L. was found crawling along the long grass in our lane in August 1973; the occasional *Tenebrio molitor* L. exits from the kitchen cupboards; *Notiophilus*, *Amara*, *Agonum* and *Harpalus* spp. occur sparingly in the garden, and the common *Sitona* has invariably alighted on my sleeve at least once each summer. Wild parsleys and *Heracleum* grow in profusion in the hedge-rows, but not a beetle to be found save *Rhagonycha fulva* Scop., a common Cantharid that is becoming scarcer each year. *Cionus scrophulariae* L. was quite common on the *Buddleia*, hidden in the leaf axils, but that has now disappeared.

¹Was 'pine' perhaps a slip on Mr. Lloyd's part? *Pyrrhidium* is invariably found on oak, at all events at Moccas. — EDS.

One Friday morning in August 1982, however, a large *Dorcus parallelipedus* L. came crawling along the carpet in the living room towards me. This was little short of astounding; I do not know where it came from, nor how it had got into the house. I looked it up in the *Victoria County History of Essex*, I: found "in the 19th-20th centuries, Colchester." I showed it to my grandson.

"Ugh! Does it bite?"

Some other recent sightings:— *Strangalia maculata* Poda and *Gyrinus natator* L.² on Forestry Commission land near Robertsbridge, Sussex, in June 1978; in the sand dunes at Palling, Norfolk, in June 1981, *Opatrum sabulosum* L., a beetle I had never found before.

In July 1981 we were staying with our son in the hills above Farnham. The hedges there grow Hogweed in abundance — a plant I cannot resist examining, just in case . . . and, on the nearest Umbellifer, a few yards from the drive, I found, for the first time ever, *Strangalia melanura* L., ♂♂ and ♀♀, which had always eluded me in whatever county I had formerly collected. *Strangalia maculata* Poda, one of my favourite Cerambycids, was there in some numbers as well, in flight and settling on the Hogweed. Last year both species were again in evidence during July, together with *Malachius* and *Ædemera* beetles.

The under-mentioned data came in [*vide* Bibliography (10, 11, 12)] after the publication of (9); there are no doubt many fresh records since then:—

Asemum striatum L. Wales: FT; Scotland: AM RE; and its ab. *agreste* F. Wales: FT; Scotland: PM; *Rhagium bifasciatum* F. Wales: CM; Scotland: B LL; and the aberrations *bistrinotatum* Pic England: ML; *latefasciatum* Pic England: ML (a near form); *mediofasciatum* Pic England: ML; *gravei* Hub. England: ML; *ictericum* Schleicher England: ML; *R. inquisitor*, L. Scotland: CT LA; *Stenocorus meridianus* L., ab. *chrysogaster* Schrank Wales: CR; *Strangalia quadri-fasciata* L. Scotland: AM M; *S. maculata* Poda Scotland: B; and the aberrant forms *binotata* Muls. England: CU; *disconotata* Pic Wales: MN; *undulata* Muls. Wales: MN; *Leptideella brevipennis* Muls. Scotland: LA (imported); *Aromia moschata* L. Scotland: AS LA (imported) PN; *Clytus arietis* L. Scotland: BW; *Lamia textor* L. Scotland: AM (doubtful); *Acanthocinus aedilis* L. Scotland: AY RF (both imported).

County symbols follow (1).

²This was doubtless *G. substriatus* Steph., the true *natator* L. having been quite recently shown to be exceedingly rare in Britain and not yet known from S. England (Angus & Carr, 1982, *Ent. Gaz.*, 33: 223-9). EDS.

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COLEOPHORA SERPYLLETORUM HERING IN KENT. — Whilst operating a light on the sea wall near Sandwich on 3.viii.1982, I retained a rather strikingly-marked coleophorid. It was a female and I later submitted the specimen to the British Museum where Dr. J. D. Bradley kindly made a genitalia preparation from which Mr. R. W. J. Uffen was later able to determine the species as *Coleophora serpylletorum*. This is a species associated with *Thymus* and was only previously known from North Wales and West Cornwall. The Atlas of the Kent Flora does not record Thyme from this area and whether this specimen was perhaps introduced into a local garden or whether on migration, remains a mystery. — N. F. HEAL, Fosters, Detling Hill, Nr. Maidstone, Kent.

TINODES DIVES (PICTET): A CADDISFLY NEW TO
IRELAND FROM BEN BULBEN, CO. SLIGO

By J. P. O'CONNOR* and J. A. GOOD**

Ben Bulben is a flat-topped cliff-walled mountain dominating the northward view from Sligo town in the north-west of Ireland. Its name is also often used to denote the whole of the 600m limestone plateau of which it forms the western projection. The rock still preserves its original horizontal bedding and as a consequence of this, weathering has resulted in vertical walls of great height. The top is undulating, largely covered by peat and it is exposed and bare (Praeger, 1950). Since its variety of upland habitats support the best-developed high level communities in this country, the area has been classified as one of international scientific importance. It is renowned for its rich flora which includes many alpine and arctic-alpine species on the cliffs, two of which occur nowhere else in Ireland. These are the sandwort (*Arenaria ciliata* L.) and the saxifrage (*Saxifraga nivalis* L.). It is also rich in bryophytes and has a little known but potentially interesting range of invertebrates (An Foras Forbartha, 1981). It is possible that the area provided nunatak refuges for northern plants at times of ice advance during the last Ice Age (Mitchell, 1976).

On August 30th 1983, one of us (J.A.G.) made an entomological collecting trip to Ben Bulben. The mountain was approached from the north *via* the Clough valley; this route appearing to provide the easiest mode of access. Several caddisflies were collected at an altitude of approx. 245m in the upper part of the valley (Irish grid reference G 737468). The specimens were swept from a lush bank mainly of grasses with some *Juncus* beside a swift-flowing stream having a stone and gravel bed. The site was some 90m from the base of a waterfall, over 90m high, which arose from a spring at the base of limestone cliffs. The waterfall, running over stepped limestone, provided hygroscopic zones where seepages flowed in thin films over the vertical rock faces.

The collection was submitted to J.P.O'C. for identification. The material included a male of *Tinodes dives* (Pictet), a species new to Ireland. Dr. P. C. Barnard (British Museum (Natural History)) has kindly confirmed this determination. The following Trichoptera were also taken with *T. dives*:— *Agapetus fuscipes* Curtis, *Drusus annulatus* (Stephens) and *Silo pallipes* (Fabr.). The last two species are new to Co. Sligo.

In Great Britain, *T. dives* has been described as rather local in distribution, frequenting streams, springs, waterfalls and running

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ditches in alpine and subalpine districts (Mosely, 1939). In the uplands of South Wales, it occupies the moorland head-waters and gives way to *T. rostocki* McLachlan (a species still unknown in Ireland) in the lower wooded valleys. This distribution would agree with Mosely's description of it being an alpine and subalpine species (Edington and Hildrew, 1981). The species is therefore a most interesting addition to the Irish fauna. It is notable that it was found in an area renowned for alpine and arctic-alpine plants. Undoubtedly the insect fauna of Ben Bulbin warrants further study by entomologists.

Commenting on the Welsh distribution of *T. dives*, Jenkins (1977) points out that the lack of records there is possibly due to the very infrequent sampling of moorland water-courses. Such an argument also applies to Ireland. It is to be expected therefore that the species will be discovered in other areas of this country. The most suitable districts would appear to be those already known to contain alpine plants.

The Ben Bulbin Trichoptera, including *T. dives*, have been deposited in the National Museum of Ireland.

Acknowledgement

We are very grateful to Dr. P. C. Barnard for confirming the identification of *T. dives*.

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A POSSIBLE THIRD GENERATION SPECIMEN OF CACOECIMORPHA PRONUBANA HBN. — On the 2 November 1983 I took a perfect but rather small (wing expanse 12mm) specimen of this Tortricid, which had been attracted to the m.v. trap here in my garden. My first *C. pronubana* in 1983 occurred on the 23 April. — P. A. CROSS, 3 Meadow Road, Burpham, Guildford Surrey GU4 7LW.

JOHN ABBOT'S LONDON YEARS

PART I

By RONALD S. WILKINSON*

"... the well-earned meed of praise must not, cannot be withheld, from those worthy and indefatigable naturalists, who, impelled by an ardent love of science, became voluntary exiles from home and all its sweets, and subjected themselves to years of labour and peril, in personal efforts to examine and illustrate the natural history of this extensive Western empire." — Alexander Wilson, *American Ornithology* (1808-1814), 3: viii, citing as examples John Abbot, André Michaux, and F. A. Michaux.

The English naturalist John Abbot (1751-1840?) is now best known to entomologists and historians for his collaboration with the botanist Sir James Edward Smith. Abbot furnished materials which were edited and amplified by Smith, and published by him in the earliest extensive monograph entirely devoted to North American entomology, *The Natural History of the Rarer Lepidopterous Insects of Georgia* (1797).¹ After emigrating to the American colonies in 1773, Abbot provided specimens and watercolours of insects, related arthropods, and birds to a number of correspondents in Britain and Europe, and found willing customers in America. William Swainson, who praised Abbot's insects as "certainly the finest that have ever been transmitted as articles of commerce to this country," described the watercolours as "so beautifully chaste and wonderfully correct, that they were coveted by every one."² As an entomological illustrator Abbot had few contemporary equals; his work has been compared favourably to that of A. J. Roesel von Rosenhof and J. C. Sepp. His specimens from Georgia and surrounding areas, which were sought by the owners of many British and European cabinets, were described by a number of authors. The insects figured by Thomas Martyn in *Psyche* (1797) as from "New Georgia" were Abbot's. His drawings and data were used by Boisdual and LeConte in their *Histoire Générale et Iconographie des Lépidoptères et des Chenilles de l'Amérique Septentrionale* (1829-1833 [-1837]). Many descriptions of arachnids in the first two volumes (1837, 1841) of C. A. Walckenaer's *Histoire Naturelle des Insectes Aptères* were based on Abbot's watercolours and notes.

*The American Museum of Natural History, New York, New York 10024.

CAPTION TO PORTRAIT

John Abbot. From a watercolour, traditionally assumed to be a self-portrait, in John Francillon's collection of Abbot's drawings and notes, now in the Zoological Library, British Museum (Natural History). A proof in the author's collection of the George Willis copy, printed in colour by Julius Bein & Co. as the frontispiece to the first volume of Samuel H. Scudder's *The Butterflies of the Eastern United States and Canada* (1889).



John Latham cited Abbot's ornithological data in the second supplement (1801) to *A General Synopsis of Birds*, and made frequent use of materials received from Abbot in *A General History of Birds* (1821-1828). Alexander Wilson, who sought out the naturalist and obtained specimens from him, utilized his observations in the *American Ornithology* (1808-1814), completed by another of Abbot's correspondents, George Ord. In the nineteenth century Abbot collected plants for botanist friends and assembled native herbaria for customers.

Despite his many contributions to science, relatively little has been written about John Abbot except brief articles, some unfortunately replete with errors. Perhaps the problem has been the elusive nature of Abbot's life. He published nothing alone; his data remained in manuscript unless printed by others; much of his life was spent in rural isolation, and even the year of his death is unknown.³ He has not been the ideal subject for those historians of natural history who have preferred to record the accomplishments of men who themselves wrote and published. Discussing the eighteenth-century English entomologist Joseph Dandridge, David E. Allen defined the tradition: "Due to the fact that he left no printed works, his existence has been almost totally overlooked — so complete has been the dominance of the subject by bibliophiles and book-listers."⁴

Assuredly Abbot has fared better than Dandridge, but those who would follow his work must still go to the manuscript sources. Many of these have been destroyed, such as the papers and other materials he owned at the end of his life,⁵ yet enough of his correspondence, notes and drawings have survived to indicate that he was far more than a collector and illustrator. Abbot was a highly accomplished field naturalist, the first to make really extensive observations of a wide variety of North American insects and other arthropods, studying their life histories and habits, while giving a surprising amount of attention to lesser-known orders. Similarly, his ornithological work reveals that he was the most significant field observer of North American birds before Alexander Wilson.

Abbot's American experience was important to his development as a naturalist, but it was in London, where he was born, that the course of his future activities was determined, and it was in and near the metropolis that he acquired the skills which would enable his success as an interpreter of nature. In his youth and as a young man Abbot was an eager participant during a period of vigorous and creative growth of natural history activity in Britain. He was stimulated by his experiences among the London naturalists to forsake a comfortable future in law and seek a less certain but more rewarding life in science.

The most important of many sources which reveal the substance of Abbot's London years are two unpublished sets of his very early,

annotated entomological watercolours at the Houghton Library, Harvard University, and the Carnegie Museum of Natural History, Pittsburgh (cited respectively, with sheet numbers, as H and C),⁶ and a brief, incomplete manuscript, "Notes on my Life" (cited as N), located at the Museum of Comparative Zoology, Harvard.⁷ Although Abbot's reminiscences were written when he was eighty-two, and so include the occasional errors which one might expect from an old man trying to recall events distant in time, the "Notes" provide much information about his early life which would otherwise have been lost.

I. Abbot's youth and introduction to entomology

Abbot was named after his father, the successful attorney John Abbot, who married Ann Clousinger on 16 April 1749.⁸ Their first child died before the birth of the second, John the naturalist, which occurred on 1 June 1751 by his own account, or on 31 May according to the records of his parish church, St. George, Hanover Square.⁹ The family lived in fashionable Bennet Street, St. James, while renting a comfortable country residence at Turnham Green, then five miles from the rapidly expanding urban area. Eventually young John had two sisters, Elizabeth and Charlotte, and a brother, Thomas.¹⁰ He was tutored at home, and his precocious interests in reading and art were nurtured by attentive parents. Abbot later recalled that he "had a very early love for Books," spending much of his pocket money for them. A youthful "taste for drawing" was stimulated by his father's large and valuable collection of prints, "of some of the best Masters, he had also many good paintings" (N).

Abbot had a "peculiar liking for Insects" long before he knew how to capture and preserve them. He remembered "knocking down a Libella," a dragonfly, and pinning it, then being told that "it wou'd sting, as bad as a Rattlesnake bite."¹¹ The Turnham Green house became the site of tentative attempts at rearing, which, like other eighteenth-century naturalists, Abbot termed "breeding." He admitted that at the time he knew "no method of keeping" the imagos when he succeeded (N). Despite his parents' generosity, he had obviously not acquired the most recent guide to the British Lepidoptera, Benjamin Wilkes' *The English Moths and Butterflies* [1747 or 1748?-1749], which would have provided rudimentary instructions for capturing insects and making a collection, as well as much other useful information.¹² The first entomological book specifically traceable to Abbot's youthful library is Eleazar Albin's *A Natural History of English Insects* (editions from 1720 to 1749), mentioned in the "Notes," but he appears to have purchased his copy of Albin somewhat later, after he had started to collect more knowledgeably and in earnest.¹³ Rather, it was a chance meeting that set him on the right course. During one of his "Walks after

Insects" he became acquainted with "a Mr Van Dest the famous flower painter,"¹⁴ who invited him to visit. Abbot was shown "a pattern of the large Net," surely a clap-net,¹⁵ and the artist, who "had been a small collector," gave the young man "some rare Insects." Abbot recalled that after the serendipitous encounter he had "immediately a net made and began to understand keeping them [his insects] better" (N).

II. The entomological watercolours

Abbot's earliest surviving entomological watercolours were executed in 1766. Although they are not as detailed and highly finished as his work of only a year later, as he was still learning to use the pencil and to colour effectively, they reveal by their content and data (as do several 1767 drawings) that in the spring and summer of 1766 he was taking Lepidoptera with a net, evidently the clap-net suggested by his elder friend. He captured a number of butterflies, including *Anthocharis cardamines* (L.), *Aglaia urticae* (L.), *Vanessa atalanta* (L.), and *Melanargia galathea* (L.), and knew at least the vernacular names of some (H17, 19, 20, 21). The 1766 drawings include common moths and beetles, a study of tipulids (H38), and various aquatic insects, as well as spiders and phalangids. Assuming that the text which Abbot would compile from his collecting notes in 1772 to embellish the volume of drawings now at Harvard at least partially reflects original data (*q.v.*), his methods and observations were becoming more sophisticated during this first documented 'season.' He may have been rearing Lepidoptera successfully from larvae; he had obtained a second net for collecting in ponds and streams; he was searching for insects on plants and in dung; and he noticed that one of his beetles (H2, *Geotrupes stercorarius* [L.]) was "much infested with small brown Ticks [mites]." Abbot kept an entomological journal, now lost, which appears to have contained entries dated at least as early as May 1766, when he was fourteen.¹⁶ The painter "Van Dest" was his only known mentor at the time, but he may also have been stimulated to try more varied methods and to keep dated records of his collecting and rearing activities by the information contained in his copy of Albin's book, which he claimed was of "great use" (N). Probably the volume was obtained after he met "Van Dest," who could have suggested its purchase, having been a "small collector" himself.

Abbot's artistic work improved dramatically in 1767, and by the end of that year he had acquired much of the skill in drawing and colouring which would lead to his recognition as one of the major entomological illustrators of the watercolour tradition. The evolution was at least partially due to the efforts of a drawing master engaged by the elder Abbot to further his son's education. Jacob Bonneau, an accomplished draughtsman, engraver and painter

whose works were exhibited in London, gave his student lessons at the house in Bennet Street. Abbot recalled that Bonneau "did not paint in Water Colours, he only understood the Rules of Drawing & perspective" (N). Eighteenth-century sources suggest that Bonneau was more versatile,¹⁷ but it is evident from Abbot's statement that however much his drawing might have improved as a result of the lessons, he did not learn his colouring technique from Bonneau. The source of that aspect of his development is still unknown.

In 1767 Abbot's composition was progressing from the relative awkwardness of his early entomological arrangements into more aesthetically pleasing patterns.¹⁸ Although he acquired Albin's *A Natural History of English Insects* very early in his career, only seven of the nearly one hundred and fifty sheets of illustrations known to have been executed between 1766 and 1773 (chronologically, C2, 8, 6, 4, 7, 98, 21; 1769-1772) were in Albin's style, portraying the metamorphosis of various Lepidoptera by depicting a more or less dominant foodplant with its feeding larvae, surrounded by 'cabinet-set' adults, and with pupae either separately delineated or, when appropriate, attached to the plant. These illustrations, the only London drawings to include botanical subjects, easily betray their debt to his copy of Albin, and were not necessarily influenced by the plates of Maria Sybilla Merian, Roesel von Rosenhof, J. C. Sepp, Benjamin Wilkes (in *The English Moths and Butterflies*), Moses Harris (in *The Aurelian*), or others in the same tradition, although Abbot certainly saw some of these books after his introduction to the London naturalists, and may have gained artistic inspiration from them. Abbot would use the style originally taken from Albin for a considerable number of watercolours, including the illustrations of metamorphosis which Smith published in *The Natural History of the Rarer Lepidopterous Insects of Georgia*¹⁹.

The majority of Abbot's London drawings, those which depict insects without the addition of botanical subjects, exhibit the more tabular arrangements preferred by a number of his contemporaries. Individuals were portrayed in brief series, or, if more numerous, in rows of varying precision. As early as 1767 Abbot executed more geometrical compositions, in which insects were arranged in a pattern radiating around a point at the center of the drawing. A considerable number of his groupings combine tabular and geometrical approaches. All of these devices were familiar to eighteenth-century entomological illustrators, who often used several styles of plate arrangement within a single work to achieve a varied and pleasing effect.²⁰

The tabular style of entomological illustration has always paralleled one of the most traditional ways of arranging insects in cabinets. One may argue that this has been coincidental, in that many persons from the seventeenth century to the present have

felt that neat rows were aesthetically pleasing and natural both for plates in books and drawers in cabinets. But tabular arrangements did not always prevail in cabinets of the period of the Enlightenment, and the fact that differing conventions of illustration corresponded to similar styles of drawer patterns suggests that more might have been involved than coincidental concepts of aesthetics. For example, illustrators who used geometrical patterns when depicting insects may have been at least partially influenced by conceits of cabinet arrangement. In seventeenth and eighteenth-century collections, smaller objects such as insects and shells were often arranged in drawers according to geometrical designs. Contemporary illustrations and descriptions indicate that most collectors who chose this approach used simple, symmetrical compositions similar to those seen in the plates of a number of natural history books, and since the origin of the geometrical fashion of arranging the contents of cabinet drawers preceded the eighteenth-century works in which such plates appeared, it is reasonable to suppose that in some cases the first could have suggested the second. Perhaps the influence was mutual. A number of European publications described and depicted the contents of some cabinets, especially those of the Dutch collectors, in which more lavish and even fantastic patterns utilized multiple specimens of each of a number of species.²¹ Benjamin Wilkes was the only major British entomological artist to produce plates with more intricate symmetrical patterns of insects; in the "Twelve New Designs" (1742 and later editions) he repeated individuals of the same species a number of times,²² but John Abbot avoided such extreme devices.

Whatever the source of his arrangements, at least one of the traditions of the cabinet obviously influenced Abbot's style. In the London drawings and in almost all of his later entomological work, his adult insects were not depicted in the more natural poses used by some of his eighteenth-century contemporaries, most notably Moses Harris in *The Aurelian*. Rather, they were 'set' specimens, symmetrically expanded and carefully mounted for cabinet drawers. The two styles, natural and artificial, have continued side by side in entomological illustration for centuries, and of course are still with us. All of the conventions adopted by Abbot during the London years, including the varied styles of composition, were used in his later work.

Abbot's English watercolours demonstrate the two most remarkable factors in his development as artist and entomological illustrator; the relatively short time in which his techniques were developed, and the high level of mastery he attained. The 1767-1773 drawings are of uneven quality, but many, even most, can be classed as among the best eighteenth-century work of their kind. The Russian naturalist Andrey Avinoff, who was an accomplished artist and a connoisseur of no mean capacity, owned the set of Abbot drawings

now at the Carnegie Museum, and described them as "among the masterpieces of entomological portraiture . . . on a par with the illustrations of Sepp and Roesel"²³ (or, as James Edward Smith judiciously ranked them, "the admirable Roesel, and the inimitable Sepp").²⁴ Avinoff praised Abbot's careful attention to detail and effect: "every hook or minutest spine is recorded with astounding precision," and the smallest gnats and beetles are "delineated with microscopic perfection. At the same time the general effect is never neglected. The luster of the elytra and the transparency of wings is never lost by an excess of details. The venation of the smallest flies is never exaggerated in emphasis to the point of losing the general gauzy appearance. Here the artist was in full control of the purposes of the naturalist."

Calling attention to the remarkable precision of Abbot's illustrations of Lepidoptera, Avinoff mentioned "the variety of . . . surface effects of different parts of the wing with coarser and finer arrangements of scales and even . . . the individual elongated scales of the fringes. An artist versed in the technique of watercolor will appreciate the difficulty of preserving the fine light veins on a colored background without using white paint. . . . The vast majority of the figures throughout the plates are executed in 'pure' water color technique, using transparent tints without washes of gouache. The Deaths-head Moth [C17, *Acherontia atropos* (L.)] is an object of amazement in this regard. One peculiar pattern of the front wings of this moth is produced in nature by light scales of different shades and density on a dark background. The same effect is rendered by Abbot without the use of white paint and producing to the naked eye the absolutely accurate and true aspect. A magnification of 7-8 times discloses a most ingenious, uniform and astonishing technique of microscopic strokes of dark tints on white paper showing through."²⁵

Avinoff's previously unpublished analysis is of considerable interest. Obviously the engravers who prepared Abbot's later drawings for publication, and the 'artists' who coloured the plates after they had been pulled, could not hope to convey more than a hint of the details and nuances of such work. The problem, which was hardly unique in the eighteenth and nineteenth centuries, was especially acute in Abbot's case, so much so that those who know his art only from published plates can have no idea of his actual talent.²⁶

Curiously enough, the high scientific accuracy of Abbot's entomological drawings has been interpreted by Vivian Rogers as "truly *trompe l'oeil* at its finest in natural history illustration."²⁷ Art historians and students of the tradition of scientific illustration would disagree, as the purpose of Abbot and others of his kind was quite different from that of artists who practised such painterly conceits as *trompe l'oeil* deception.²⁸

NOTES

¹Ronald S. Wilkinson, "Smith and Abbot, *The natural history of the rarer lepidopterous insects of Georgia* (1797): its authorship and later history," *Entomologist's Rec. J. Var.* **93** (1981), 213-218; Wilkinson, "Nineteenth-century issues of Smith and Abbot, *The natural history of the rarer lepidopterous insects of Georgia* (1797)," *Entomologist's Rec. J. Var.* **94** (1982), 122; Wilkinson, "John Abbot's drawings and notes for a proposed supplement to Smith and Abbot, *The natural history of the rarer lepidopterous insects of Georgia* (1797)," *Entomologist's Rec. J. Var.* **94** (1982), 159-160. Some selected earlier publications about Abbot and his work, arranged chronologically, are William Swainson, *Taxidermy; with the biography of zoologists* (London, 1840), 99-100; Hermann A. Hagen, "Abbot's Handzeichnungen im Britischen Museum und die Neuroptera Georgiens," *Stettin. ent. Ztg* **24** (1863), 369-378; Samuel H. Scudder, "John Abbot, the aurelian," *Can. Ent.* **20** (1888), 150-154, reprinted in Scudder, *The butterflies of the eastern United States and Canada* (Cambridge, Mass., 1889), 1: 651-654; William F. Kirby, "John Abbot, the aurelian," *Can. Ent.* **20** (1888), 230-232; Walter Faxon, "John Abbot's drawings of the birds of Georgia," *Auk* **13** (1896), 204-215; Witmer Stone, "Some unpublished letters of Alexander Wilson and John Abbot," *Auk* **23** (1906), 361-368; Robert P. Dow, "John Abbot, of Georgia," *Jl N.Y. ent. Soc.* **22** (1914), 65-72; Samuel N. Rhoads, "Georgia's rarities further discovered in a second American portfolio of John Abbot's bird plates," *Auk* **35** (1918), 271-286; Anna S. Bassett, "Some Georgia records of John Abbot, naturalist," *Auk* **55** (1938), 244-254; Elsa G. Allen, "A third set of John Abbot bird drawings," *Auk* **59** (1942), 563-571; Ralph V. Chamberlin and Wilton Ivie, "Spiders of the Georgia region of North America," *Bull. Univ. Utah* **35** (1944), esp. 7-24; Bryan P. Beirne, "Some original paintings by John Abbot," *Lepid. News* **4** (1950), 25-26; Elsa G. Allen, "The history of American ornithology before Audubon," *Trans. Am. phil. Soc.*, new Ser. **41** (1951), 385-591 (esp. 543-549 for Abbot); Erwin Stresemann, "On a collection of birds from Georgia and Carolina made about 1810 by John Abbot," *Auk* **70** (1953), 113-117; Elsa G. Allen, "John Abbot, pioneer naturalist of Georgia," *Ga. hist. Q.* **41** (1957), 143-157; Woolford B. Baker, "John Abbot's Insects of Georgia," *Emory Univ. Q.* **15** (1959), 146-152; Arnold Mallis, *American entomologists* (New Brunswick, N. J., 1971), 3-9; Lucien Harris, *Butterflies of Georgia* (Norman, Okla., 1972), 3-9 and *passim*; and P. G. Parkinson, "Natural history drawings and watercolours by John Abbot, 'the aurelian,' naturalist of Georgia, in the Alexander Turnbull Library," *Turnbull Libr. Rec.* **11** (1978), 26-36. These are of greatly differing merit. Marcus B. Simpson, "The artist-naturalist John Abbot (1751-ca. 1840): contributions to the ornithology of the southeastern United States," *N. Carol. hist. Rev.* **61** (1984), is now in press. Other contributions are mentioned in these Notes. The short-title method is used after first citation. Late in life, Elsa G. Allen attempted an extensive monograph on Abbot, but was unable to produce a publishable text before her death. Her notes and drafts, which should be used with caution because of errors of fact, transcription and interpretation, are among her papers in the University Archives, Olin Library, Cornell University.

²Swainson, *Taxidermy*, 99.

³Abbot died in rural Georgia, where he had been living in a cabin on the Bulloch County land of his friend William McElveen. The naturalist was buried in the private McElveen family cemetery, which still exists, although Abbot's gravestone has not survived and his precise burial site is unknown. He was alive in April 1840, as a close friend in Savannah, Georgia, wrote on 22 May that he had not heard from Abbot in a month; Augustus G. Oemler to

Thaddeus M. Harris, 22 May 1840, Thaddeus Mason Harris Papers, Massachusetts Historical Society, Boston. One of the copies of Smith and Abbot's 1797 book in the Library, American Museum of Natural History, contains manuscript notes about Abbot by a previous owner, "C. B.," taken from a letter of John E. LeConte received on 4 March 1844. LeConte (1784-1860), an American entomologist who knew Abbot well, "had heard from him 4 years ago — He was then 90 years old . . . does not know if he is yet living." The four-year period suggests spring 1840, but Abbot would not have been ninety until spring 1841. Perhaps LeConte erred about the age. Lucien Harris appeared to have more definite information. In *Butterflies of Georgia*, 6, he stated that Abbot "died in December, 1840, or in early January, 1841." Harris (*in litt.*) would not reveal his source.

⁴David E. Allen, *The naturalist in Britain: a social history* (London, 1976), 14.

⁵Letters written by Abbot late in life suggest that he had kept his correspondence, and even some papers brought from London in 1773. He had a number of watercolours, and he is assumed to have kept notes and pattern drawings. After his death, his friend Oemler sought out McElveen, on whose land Abbot had lived: "I desired him to let me have the old man's papers, paintings, colours &c &c at his own price, but learned to my sorrow, that nothing was in existence now, 'the children had used up all'"; Augustus G. Oemler to Thaddeus W. Harris, 14 March 1851, Library, Museum of Comparative Zoology, Harvard University.

⁶The forty-two bound sheets of watercolours at Harvard (Houghton Library, MS Typ. 426.1), on paper, are as arranged by Abbot in 1772; see section IV below. A number are signed, and twenty-seven of the sheets are dated by Abbot (1766-27 August 1772). The figures are chiefly of Lepidoptera and Coleoptera, but specimens of Orthoptera, Hemiptera, Hymenoptera, Diptera and additional orders are depicted, including arachnids and other arthropods. Abbot's notes, which face each sheet as bound, were prepared in 1772, as was his title-page for the volume, "A Natural History of Insects. Consisting of Forty two Drawings, Exhibiting Two hundred and thirty five Figures. Drawn and coloured from Nature. Together with a concise and accurate Description of each. By John Abbot London 1772." The volume was item 695 in Bernard Quaritch's unnumbered *Catalogue of books on natural history* (London, 1912), which had previously been issued in parts. A bookplate records that the drawings were acquired by the Boston Society of Natural History from the Museum of Comparative Zoology, Harvard University, in a 1915 exchange. A later transaction returned the volume to Harvard. The Carnegie Museum set, located in the Museum Library, is included in a bound volume of entomological watercolours on paper. 97 sheets are by Abbot (1-69, 71-77, 79, 81-100; although in a style similar to Abbot's, 80 is probably by another artist). Many are signed. Ninety-five sheets are dated by Abbot (2 April 1767-30 January 1773), and the majority are annotated. His comments concern provenance, collecting and rearing. There are identifications in several later hands. As in the Harvard set, Lepidoptera and Coleoptera dominate, but insects and other arthropods of a number of orders are included. The Carnegie watercolours were purchased at a London sale in 1913 by a Russian bookseller acting as agent for the Russian naturalist Andrey (Andrei) Avinoff (1884-1949). As Avinoff recalled on many occasions, when departing from Russia in 1917 he had to leave his famous collection of butterflies and his extensive entomological library. Reduced to travelling with one suitcase, he chose a single favourite volume, that containing the Abbot drawings. (His collection was later nationalized, and his library was burned in 1919.) While

Avinoff was director of the Carnegie Museum, he placed the watercolours in their present home. For Avinoff see Geoffrey T. Hellman, "Black tie and cyanide jar," *New Yorker* 24 (21 August 1948), 32-47, and Alexander Shoumatoff, *Russian blood: a family chronicle* (New York, 1982). Both accounts mention the history of the Abbot watercolours.

⁷In 1834 Abbot was persuaded by Augustus G. Oemler to write an autobiographical account. "Notes on my Life" was probably never finished. The existing manuscript covers only the period from Abbot's birth to his arrival in Georgia as a young man. Oemler sent the manuscript to another of Abbot's friends and correspondents, the Harvard entomologist Thaddeus W. Harris (1795-1856); the covering letter, dated 27 April 1834, was printed by Dow, "John Abbot," 70. A transcription of Abbot's "Notes" was published by Charles L. Remington, *Lepid. News* 2 (1948), 28-30. Quotations here are from the original in the Library, Museum of Comparative Zoology.

⁸At St. Bene't, Paul's Wharf; *The registers of St. Bene't and St. Peter, Paul's Wharf, London*, ed. Willoughby A. Littledale, Harleian Society Publications, Registers, 40 (London, 1911), 182. The entry identifies the groom's parish as St. George, Hanover Square, and Clousinger's as St. Martin-in-the Fields. The bride was a minor. The elder Abbot's birth record has not yet been located. According to the Law Society, London, he appears in the unofficial law lists, e.g. in 1783, practising at 7, Holborn Court, Gray's Inn, and in 1785 and 1787, in Warwick Court, Holborn. David E. Allen (*in litt.*) has determined that he died in 1787 and was buried on 10 July; Parish Registers, St. James, Piccadilly, 22, Buckingham Palace Road Branch, Westminster Public Libraries.

⁹Ronald S. Wilkinson, "John Abbot's birth data," *Entomologist's Rec. J. Var.* 87(1975), 49-51. The dates are old style, as the Gregorian calendar was not adopted in England until the following year. Since the 1975 paper, the registers of St. George, Hanover Square have been transferred to the Buckingham Palace Road Branch, Westminster Public Libraries.

¹⁰In 1844 John E. LeConte wrote to a correspondent that "Abbot was a younger brother of Lord Colchesters"; notes by "C. B.," Library, American Museum of Natural History. Charles Abbot (1757-1829), first Baron Colchester, was speaker of the House of Commons, 1802-1817. The erroneous information could not have come from Abbot, who had refuted a similar rumour during his lifetime. Writing to Oemler, he explained that his brother Thomas "was put as a Clerk to an Attorney, & as I heard was a promising young man." He had read no news of Thomas since the end of the American war for independence, but had "no doubt he was not the late speaker of Parliament"; John Abbot (hereafter Abbot) to Augustus G. Oemler, 26 September 1833, Thaddeus Mason Harris Papers, Massachusetts Historical Society, Boston. Charles Abbot's lineage is evident; see his entry in the *Dictionary of national biography*.

¹¹The original comparison was probably to a viper's bite, but in 1834 Abbot had lived in the land of rattlesnakes for sixty years. According to folklore, dragonflies could 'sting' with their abdomens, a belief which perhaps originated from observations of oviposition.

¹²Ronald S. Wilkinson, *Benjamin Wilkes, the British aurelian* (Faringdon, 1982), 8-10. Although Moses Harris' *The aurelian* (London, [1758-] 1766)

was currently appearing in parts, the preliminaries, which included a section on collecting methods, were not published until 1766.

¹³Abbot recorded that he "had bought Albins history of the changes of Insects coloured which was [of] great use to me" (N). Albin and the editions of his book are discussed by Arthur A. Lisney, *A bibliography of British Lepidoptera* (London, 1960), 77-82. Albin seems to have been born before 1690, and was certainly dead in February 1741/2; Ronald S. Wilkinson, "Evidence concerning the death of Eleazar Albin," *Entomologist's Rec. J. Var.* 89 (1977), 220-221. Apparently Abbot took his copy of Albin to America, as he wrote in a portion of the notes furnished to Smith but excluded from the Georgia book that "Albin in his Hist. of Insects says he has not painted them of too bright Colours, but like myself he falls much short of the Originals for want of sufficient bright colours . . . I think Albin has merit, considering the time he published his Works"; Abbot, "A natural history of North American insects," f. 90v, James Edward Smith Papers, Linnean Society of London. Abbot was eventually acquainted with Albin's *A natural history of spiders* (London, 1736). He informed Swainson that he intended to execute drawings of Georgia spiders "in the manner of Albin"; Abbot to William Swainson, 20 December 1816, Swainson Correspondence, Linnean Society of London. (Abbot had already completed at least three discrete sets of watercolours of American arachnids, as well as miscellaneous drawings.)

¹⁴The identity of "Mr Van Dest" has never been determined. Perhaps his name was Van Diest. The Dutch landscape painter Adriaen Van Diest (1656-1704) spent most of his life in England and was buried in St. Martin-in-the-Fields. He left a son, Johan, who painted portraits in eighteenth-century London; *Dictionary of national biography*, and Ulrich Thieme and Felix Becker, *Allgemeines Lexikon der bildenden Künstler* (Leipzig, 1907-1950), 9: 250-251. The Boyd marriage index, Society of Genealogists, London, indicates that two Van Diests, Adam and Jerome, were living in the parish of St. Martin-in-the-Fields in the mid-eighteenth century. Abbot's benefactor may have been a member of the family. The late P. B. M. Allan suggested to the author that Abbot's description of "Van Dest" as "famous flower painter" and entomological collector precisely fits the botanical artist Georg D. Ehret (1708-1770), and that the elderly Abbot might have confused Ehret in his memory with someone else. The idea is worth repeating.

¹⁵The device is described by Ronald S. Wilkinson, "The history of the entomological clap-net in Great Britain," *Entomologist's Rec. J. Var.* 90 (1978), 127-132.

¹⁶The notebook was mentioned by Abbot when referring to an imago which "came out 8th Aug[u]st 1770 see Journal" (C59). Obviously he was keeping records as early as his capture of *cardamines* in May 1766 (H17), which he used when organizing and annotating his drawings in 1772 (q.v.) His notes may have formed a continuous "journal."

¹⁷Bonneau (d. 1786) is mentioned in the *Dictionary of national biography*; Thieme and Becker, *Lexikon*, 4: 307; Algernon Graves, *The Royal Academy of Arts: a complete dictionary of contributors* (London, 1905-1906), 1: 237; Michael Bryan, *Bryan's dictionary of painters and engravers* (London, 1909-1910), 1: 168; Adolphe Siret, *Dictionnaire historique et raisonné des peintres* (Berlin, 1924), 1: 120; and Emmanuel Bénézit, *Dictionnaire critique et*

documentaire des peintres, sculpteurs, dessinateurs et graveurs (Paris, 1948-1955), 2:3. Several of these sources indicate that Bonneau used the watercolour technique.

¹⁸All but a small number of Abbot's surviving London watercolours can be placed in chronological order by year, and over two-thirds can be arranged in order by year, month and day, with the aid of his own dates of composition.

¹⁹The "1797" illustrations were actually received by Smith much earlier, as those copperplates which were dated were prepared from Abbot's watercolours in 1793, 1794 and 1795. The style derived from Albin was later used in a number of drawings, especially those sets of watercolours especially designed as "supplements" to the Smith volumes. At least one of the "supplement" sets was meant to be published; Wilkinson, "John Abbot's drawings and notes for a proposed supplement to Smith and Abbot." The publication concerns the Alexander Turnbull Library (New Zealand) set described by Parkinson, "Natural history drawings." Prints made from the watercolours are now being issued in fascicles by the Turnbull Library.

²⁰Two of a number of examples are the plate designs in "Dru" Drury, *Illustrations of natural history* (London, 1770-1782), and Pieter Cramer and Caspar Stoll, *De uitlandsche Kapellen* (Amsterdam, 1779-1791).

²¹Surely the best known is the account by Albert Seba and others of his cabinet, *Locupletissimi rerum naturalium thesauri accurata descriptio* (Amsterdam, 1734-1765), with its curious plates. See also S. Peter Dance, *Shell collecting: an illustrated history* (London, 1966), 62-64, plates I and VIII, and his cited sources, as well as the interesting plates in Levinus Vincent, *Wonder-tooneel der Nature* (Amsterdam, 1706-1715).

²²Wilkinson, *Benjamin Wilkes*, 5-7, and plates I-XII.

²³Andrey Avinoff to Norman D. Riley, 22 November 1934, Andrey Avinoff Papers, Library, Carnegie Museum. Apparently the letter was never posted.

²⁴James E. Smith and John Abbot, *The natural history of the rarer lepidopterous insects of Georgia* (London, 1797), 1: ii.

²⁵Avinoff's remarks are taken from an undated typed transcript, probably of a dictaphone recording, in his papers at the Library, Carnegie Museum.

²⁶The loss was compounded even more by the colouring process. Illustrators such as Abbot, who could not, because of the circumstances of publication, execute or supervise the colouring of impressions taken from the engravings, were often indifferently served. Certainly Abbot never saw any of the engravings produced from his American work, let alone the plates pulled from them. Swainson mentioned "the many inferior copies" of the 1797 work which he encountered; *Taxidermy*, 100. Of course these were not Abbot's fault.

²⁷Vivian J. Rogers, "John Abbot, Samuel Wright and a volume of Abbot's watercolours," *Atlanta hist. J.* 22 (1978), 42.

²⁸The difference is in the artist's intent. Celestine Dars has characterized *trompe* paintings as "images of deception," rendered to achieve three-dimensional illusion with an intent to deceive the eye; *Images of deception: the art of trompe-l'oeil* (Oxford, 1979), 7. One needs only to view a number of works in the *genre* to appreciate M. L. d'Otrange Mastai's 'rule' that they *must* have been "conceived with the specific purpose in mind of convincing visual delusion"; *Illusion in art: trompe l'oeil* (New York, 1975), 21, which of course was far from the purpose of the realism attempted by natural history illustrators. Martin Battersby has contrasted *trompe l'oeil* with an artistic tradition which is actually much closer to natural history illustration, that which he has chosen to call "magic realism," the use of "a meticulous finish with every detail delineated with the utmost exactitude, the whole composition being in a ruthlessly sharp focus which, when properly handled, conveys an intensity of feeling penetrating below the surface texture to discover the essence of the model whether human or inanimate" — a technique which has been widely used for the depiction of still life, the human figure, and landscapes. In *trompe l'oeil*, as Battersby suggests, such realism is used as a means of heightening the deception; *Trompe l'oeil: the eye deceived* (London, 1974), 19. In *trompe* painting, images are at least for an instant meant to be visualized as natural objects, precisely so that we reach for the fruit or begin to step through the doorway. Natural history illustration serves a different purpose.

Daraba laisalis Walker (Lep.: Pyralidae) in 1983

The following two records are of only the second and third known British *Daraba laisalis*. The first *D. laisalis* known to occur in Britain was taken by E. W. Classey in an m.v. trap at Hampton, Middlesex on the night of 5/6 September 1973, which specimen is in the B.M.(N.H.) Also in the B.M.(N.H.) is a single example of *laisalis* from Spain, taken at S. Pedro Alcantara in September 1968 by the late Mr. D. W. H. ffennell. We are indebted to Mr. M. Shaffer (British Museum (Nat. Hist.)) for the information that the larva feeds on Solanaceae, and for giving its distribution abroad as the Middle East and Africa. — EDITOR.

DARABA LAISALIS IN BEDFORDSHIRE. — During a recent meeting of the BENHS, Mr. Chalmers-Hunt identified a set specimen as this species. This particular moth was taken in a Robinson light trap in my garden here on the 30th July 1983 (fig. 1).

I was fascinated at the time of capture by the posture of this insect. It presented a strange picture indeed with its extremely long front legs and its abdomen curled over towards its head like a scorpion (fig. 2). — K. F. WEBB, 2 Kingsdown Avenue, Luton, Beds LU2 7BU, 14.ii.1984.

DARABA LAISALIS IN SURREY. — I took a good specimen of this attractive pyrale here in my m.v. trap on the night of 18th July 1983. It was kindly determined as this by Dr. K. Sattler (British Museum (Nat. Hist.)). — Sir JOHN DACIE, 10 Alan Road, Wimbledon.



Daraba laisalis, Luton, Bedfordshire, 30.vii.1983, Fig. 1, magnified x3. Fig. 2, the same, also enlarged, showing curious posture when at rest.

Notes and Observations

OREODYTES SANMARKI SAHLBERG AND AGABUS BIGUTTATUS OLIVIER (COL.: DYTISCIDAE) IN GLAMORGAN. — At the top of the small valley of Gilfach Goch, Mid-Glamorgan is a large tip of coal waste. Out of the bottom flows a very tiny spring which never dries up. This forms a little stream about 1" deep which dampens an area of 10-15 sq. metres. Here in August 1983 I discovered *Oreodytes sanmarki* Sahlberg swimming in the stream, and *Agabus biguttatus* Olivier, burrowing under stones. They appear to be new records for Glamorgan. — D. R. COPESTAKE, 22 Meadow View, Banbury, Oxon OX16 9SR.

NAENIA TYPICA L.: THE GOTHIC IN MARCH. — On the evening of 12 March 1983 I observed a fresh specimen of this moth in the bathroom of my house in Swinton, Greater Manchester. It was quite active but it was impossible for me to ascertain whether it had been hibernating. The window had been shut for several weeks but it may have gained access via an air brick. During the past two seasons the species has been quite a common visitor to a light trap in my garden. In 1982 there were 11 records of it between 3 and 22 July, and in 1983, 29 between 30 June and 4 August. South (1977, *Moths Br. Is.*, 1:166) and Heath & Emmet (1979, *M.B.G.B.I.* 9:190) both give the flight period of the imago as June and July with no mention of it hibernating. — Dr. S. E. CHRISTMAS, Dept. of Immunology, Paterson Laboratories, Christie Hospital, Manchester M20 9BX.

TELEIODES WAGAE NOW. AND ACANTHOPHILA ALACELLA Z. (LEP.: GELECHIIDAE) IN KENT. — A specimen of *T. wague* was taken in a Rothamsted trap at Olantigh Nursery, Wye between 6th and 13th August 1979. Another interesting species from the trap at Wye is *A. alacella*, of which one was taken sometime during August 1977. — E. S. BRADFORD.

[The above record of *T. wague* appears to be the first of this species for Kent; the second being of two specimens taken by myself at light in Orlestone Forest on the night of 16th July 1983, and kindly identified by the Rev. Agassiz. The above mentioned *A. alacella* is probably only the second for Kent, the first having been taken by R. Fairclough in 1977 (*Ent. Rec.*, 89:283). — J. M. CHALMERS-HUNT]

COLIAS CROCEUS GEOFFR. IN NORTH LAPLAND. — In view of the occurrence of exceptional numbers of *C. croceus* in Britain during 1983, I would like to record the presence of a single specimen near Fanasgieddi in the lower Tana valley, arctic Norway on 21 July 1983. Although this migrant is known to reach Scandinavia, as far as I am aware it has not previously been reported from such a high latitude (approximately 70° 05', 27° 50'E). — A. R. PLANT, 10 Portland Place, Lansdown, Bath, Avon. [This record is hundreds of miles outside the normal migratory range of *C. croceus*. Dr. Plant has pointed out however in a covering letter, that the Arctic season was early in 1983, and the alternative identifications that he has considered such as *C. hecla*, *C. palaeno* and *C. nastes* were all probably finished by that date. *C. hecla* is the closest in appearance which it shares with *C. nastes*, but the foodplant, *Astragalus alpinus*, is apparently absent from the Tana Valley. — C. J. L.]

SOME NOTABLE MOTHS FROM NINFIELD, E. SUSSEX IN 1983. — During some five years of running a 125w m.v.l. trap here on most suitable nights, 1983 was the first year in which over 300 species of macrolepidoptera were recorded, 306 being the actual number and so bringing the overall total to 385 species for the locality.

Probably the most remarkable capture in 1983 was a single male *Scopula nigropunctata* Hufn. (Sub-angled Wave) on the 17th July, apparently only the third known Sussex example. Among others new to this locality were: *Hadena perplexa* D. & S. (three, all of the white form), *Catarhoe cucullata* Hufn., *Paradiarsia glareosa* Esp. and *Eupithecia phoeniciata* Ramb. — M. PARSONS, The Forge, Russells Green, Ninfield, nr. Battle, E. Sussex.

AN EARLY CARADRINA CLAVIPALPIS SCOPOLI: PALE MOTTLED WILLOW AND A LOZOTAENIODES FORMOSANUS GEYER IN NORFOLK. — A specimen of *C. clavipalpis* was flying around our dining room light at about 8.30 p.m. on 28 January 1984, and proved to be in immaculate condition. I have no real idea where it came from, and can only guess that it had come in on clothes earlier in the evening. It may have been disturbed from hay and settled on clothes when I was feeding sheep just before dark. Perhaps emergence was triggered off by the comparatively warm sunshine of 27 January.

Another record that may be of interest is a single specimen of *L. formosanus*, taken at an actinic trap here on 28 July 1981, and only recently confirmed as such by Dr. Irwin of Castle Museum, Norwich. — M. R. HALL '“Hopefield”', Norwich Road, Scole, Diss, Norfolk, IP21 4DY.

CAMPAEA MARGARITATA L. (LIGHT EMERALD) BIVOLTINE IN S. E. ENGLAND. — The textbooks, surprisingly including 'The Lepidoptera of the British Isles' by C. G. Barrett, state that this species is single brooded, emerging in June and July. In S. E. England the moth is normally bivoltine, and also is dimorphic in relation to this, as Chalmers-Hunt notes in *Ent. Rec.* 64:54, where he states that some second brood specimens he took at Canterbury, 21.ix.1951, measured only 30-36mm. alar expanse compared with 40-50mm. for June/July specimens in his collection, although in fact second brood specimens, especially males, frequently measure less than 30mm., and may be as small as 25mm. B. Goater in his 'Butterflies and Moths of Hampshire and the Isle of Wight', 1974, also notes the bivoltinism of the species, stating that it 'seems to be regularly double brooded in the county, the first and more abundant emergence occurring end June-early July, and the second at the end of August-early September'. The few other references to a second brood I have found refer only to Kent (many), Hampshire, Sussex, Surrey and Dorset, but none for north of the Thames.

Concerning the frequency of a second brood, invariably a partial one with some larvae feeding up quickly followed by a short pupation period, my garden m/v trap attracted specimens each year from 1975 to 1983 inclusive, except 1977, yet not for the period 1969 to 1974, although specimens were recorded elsewhere in 1969 and 1972. Therefore it would be useful to hear of evidence of a second brood for the years 1970, 1971, 1973, 1974 and 1977. The time of appearance of this brood varies, but is basically the

second half of August and September, although a specimen was recorded as late as October 12th at Swanage in 1969 (*Ent. Rec.* 82:60). At Dartford in 1982 and 1983 second brood specimens were much in evidence, and in the former year appeared as early as August 11th and the last specimen was seen on Sept. 15th. By contrast in 1976 and 1978 second brood *margaritata* was seen as singletons on Sept. 21st and Sept. 23rd respectively.

The emergence period, given as June and July for the main brood of this insect, is not quite accurate. In N.W. Kent *margaritata* not infrequently appears in late May, as occurred in 1981, 1982 and 1983, while in the Highlands of Scotland the first half of August at least is within the insect's flight period, and J. Campbell notes that on the Isle of Canna, where the insect is presumably univoltine, in 1953 the moth appeared as early as April 24th and as late as August 22nd (*Ent. Rec.* 83:11). — B. K. WEST, 36 Briar Road, Bexley, Kent.

BARRETT'S LEPIDOPTERA OF THE BRITISH ISLES. — I can add to Mr. Chalmers-Hunt's interesting notes in "Book Talk Six" (Vol. 95 page 247). He is correct that Barrett was first published in parts. My copy of this work is one of the original ones published in this way. Although uniformly bound, it appears to have been bound volume by volume as they were completed. The last two volumes have the original part covers bound in, unfortunately however this was not done with the earlier ones.

Volume 10 is comprised of parts 107 to 118. Parts 107 to 111 are dated 1904 and the remainder are dated 1905. Parts 117 and 118 were published together as a double issue at twice the cost of the single parts, i.e. 6s plain, 10s coloured.

Volume 11 is comprised of parts 119 to 128. Part 119 is dated 1905, parts 120 to 126 are dated 1906 and parts 127 and 128, 1907. Again these two final parts were published together at twice the normal part cost.

In my copy, volumes 1 and 2 have been bound with all the plates at the end. However the other nine volumes have been bound with the plates at the end of each part as published. From this it is possible to deduce the part numbers in each volume fairly easily. Volume 3 commences with part 23 so we know that volumes 1 and 2 comprise 22 parts. As almost all parts contain four plates, it is assumed that volume 1 which has 40 plates was published in 10 parts and volume 2 published in 12 parts. Volume 2 has 46 plates not 48 as one would expect, but it appears that the final part (No. 22) had only two plates. This discrepancy was corrected however in part 23, the first part in volume 3, which has 6 plates, subscribers thus getting their money's worth.

The full breakdown of the parts is as follows: Vol 1 Parts 1-10, Vol. 2 Parts 11-22, Vol. 3 Parts 23-34, Vol 4 Parts 35-46, Vol. 5 Parts 47-58, Vol. 6 Parts 59-70, Vol. 7 Parts 71-82, Vol. 8 Parts

83-94, Vol. 9 Parts 95-106, Vol. 10 Parts 107-118 and Vol. 11 Parts 119-128. Each volume thus published in 12 parts with the exception of volumes 1 and 11 which had 10.

The date of the volume given on the title page is the date of publication of the last part. The first part could however have been published one or two years earlier. For example volume 1 is dated 1893 yet we know that part 1 was published before May 1892, probably in April of that year, as the *Ent. Rec.* Vol. 3 page 112 dated 16 May 1892 says "The first part of Mr. C. G. Barrett's work on the British Lepidoptera has been at last published".

The intention was to produce the work in monthly parts but this programme subsequently slipped a bit behind schedule. Again the *Ent. Rec.* is the source of this information. It is stated in Vol. 2 page 252 "Our monied Lepidopterists will hear with pleasure that Messrs. Reeve and Co. intend bringing out a work on the lepidoptera of the British islands in 5s monthly parts (12 parts for 54s if paid in advance) the number of parts apparently indefinite. To those who can afford an annual subscription of 54s, until the work is completed, it will be invaluable. To those who cannot, a small paper edition will be issued in vols. at 10s per vol". — M. J. PERCEVAL, Holmesdale Cottage, Mid-Holmwood, Dorking, Surrey.

RECOVERY OF MARKED CATOCALA NUPTA L. (RED UNDERWING) 6.5 KM. FROM RELEASE POINT. — On 25th September 1983 at this address (SP486144), as part of a mark and recapture study of moths at a Robinson light trap, a single male *C. nupta* was marked on the left forewing with a spot of green paint. The insect took to the wing and was watched as it flew off over neighbouring farm buildings. On 28th September, I received a telephone call from Dr. C. W. D. Gibson who is currently running a moth trap in Wytham Wood (SP457082), 6.5 km to the south west. He had that day taken in his trap the above mentioned moth, confirmed as such by his description of the marking and by my later being shown the specimen.

The two traps are separated by agricultural land and several major roads. There are no intervening woods. The Oxford Canal approximately connects the two sites and should this willow feeding species have been following the watercourse south it would have arrived in the general area of Wytham Wood. But for it to have done so and been retrapped was remarkably fortunate. I should emphasise that this record involves no artificial displacement of the moth from the original site of capture to another release site such as was reported by Craik (in *Ent. Gaz.*, **30**:115-124).

The weather during the period between marking and recapture was settled with only light southwesterly breezes. However, on the day before the initial capture, a strong southwesterly wind had been blowing *from* the direction of Wytham Wood to Park Farm, Kidlington. The possibility exists therefore that the moth had been blown

from its home area by this wind and may have been returning. The species is recorded annually at both sites. In conclusion, I would be interested to hear if anyone else has recorded natural movements of marked moths over such distances in the British countryside. — PAUL WARING, Park Farm House, Banbury Road, Kidlington, Oxford OX5 1AH.

ACHETA DOMESTICUS L. (THE HOUSE CRICKET) LIVING OUTDOORS IN SURREY. — A colony of house crickets became established around this suburban road in east Surrey during the long hot summer of 1983. Now rarely found in houses, it normally survives outside only on rubbish tips warmed by rotting material.

The insects were first noticed by their call, a short trill repeated over and over again. They started calling just before dusk and continued long into the night. The call was heard almost every night from 29th July to 9th September, when the onset of cold windy weather brought an end to the colony.

The number of calling males built up slowly to a maximum of ten in early September. Most were calling from cracks that had developed between the lawns and the paving stones during the long dry spell. Others were in cracks in the road surface or in the bare soil. The sounds came from the same positions each night. Calling males could be observed with a torch but only after a very stealthy approach. The raised position of the fore-wings while stridulating was very evident. The ones in the road cracks stopped calling when a car or a pedestrian passed. On one occasion a female was seen in a crack behind a paving stone, flexing its ovipositor raised above the folded hind-wings.

The origin of this colony of these normally indoor creatures is unknown. None of the local residents has admitted to having crickets on the hearth. There is a laundry a quarter-mile away and the terminal and other buildings of Gatwick Airport are one mile distant. These are both possible sources. — R. D. HAWKINS, 30D Meadowcroft Close, Horley, Surrey RH6 9EL.

BOUNTY ON WITTERSHAM WHITES. — Down at Wittersham on the Isle of Oxney bounty has been paid out on the heads of cabbage whites ever since anyone can remember. Wittersham lies on the Sussex-Kent border on the edge of the fertile pastures of Romney Marsh. It is in a good position to receive migrants since Dungeness is only ten miles away. No doubt plenty of cabbage crops were grown and hordes of defoliating caterpillars were seen.

Today the Wittersham Horticultural Society still carry a class in the children's section: '*Class 60 For the most Cabbage White Butterflies mounted on cards*'. Class 59 is '*For the most Queen Wasps pinned on cardboard mounts*.' First prize for each class in 1983 was 20p; 15p for second and 10p for third. Boys and girls under 16 who obtain the most points in the various classes are awarded a bonus of 50p.

Obtaining details about the number of cabbage whites collected in the past has proved relatively unsuccessful. One might have expected records of thousands of whites collected pre-1955 before the granulosis virus struck the cabbage whites and before the 1940s before organic insecticides were widely used. Marcia Ascott of Wittersham very generously went through the parish magazines from 1885 to the present day. Only names of recipients are given without numbers collected. It would seem that cabbage whites are becoming rare in Wittersham now. A note in the 1968 accounts relate that '*only the lack of the familiar cards of cabbage butterflies and queen wasps showed the combined effects of wet weather and the widespread use of insecticides.*' It is of interest that the prize was not awarded in 1971.

Talking to a few locals has revealed some details of technique. Hand-made butterfly swats were made out of about three faggots which were bound together. Some people recall catching about 300-400 whites which seemed to be an average figure. One person remembered catching nearly 1000 one year. The whites used to be presented in boxes or in tins with the number recorded on the outside. Now they are pinned on cards like the queen wasps. Many children in the village used to collect the cabbage whites for the annual show. For most of them it was the only way they could come by a few pennies. Other classes were in handwriting, painting and sewing.

This method of biological control of whites and wasps was probably effective in checking some infestations and for using up the unbounding energies of children in the parish. It is intriguing that this tradition is still maintained by the Horticultural Show. A similar sort of bounty was paid out by churchwardens for sparrows elsewhere in Kent at Petham, near Canterbury (*Country Life* 1973 June 21st). The annual average catch was about 600 birds, with a maximum of 929 in 1839. The bounty was a farthing for young and a halfpenny for older sparrows. — JOHN FELTWELL, Henley Down, Catsfield, East Sussex.

BUCCULATRIX THORACELLA (THUNBERG) (LEP.: LYONETIIDAE). — The past decade has seen a remarkable change in the distribution and abundance of this species. It is a colourful and well-marked moth and the larval feeding is conspicuous, making it unlikely that it was formerly overlooked.

In the past it was considered rather a scarce woodland species with a mainly western distribution. Meyrick gives "Gloucester to Derby and Lancashire"; outside this area there were isolated records from Kent and Sussex reported in their respective Victoria County Histories. The only foodplant was small-leaved lime (*Tilia cordata*).

In the 1970s I began to find it in local plenty in more easterly counties such as Northamptonshire and Essex, where it occurred in relics of ancient woodland in which small-leaved lime had persisted.

These colonies were tucked away in areas not much frequented by microlepidopterists and were probably of long standing; similar colonies were most likely present in other counties.

In recent years local councils often plant small-leaved limes as amenity trees on roadside verges and in Essex at any rate *B. thoracella* spread to them from its woodland haunts. Common lime (*T. x vulgaris*) often grows alongside and *B. thoracella* began to use it as an alternative foodplant and then fully adapted to it. This made possible its rapid and spectacular extension of range and its recent establishment as one of our most abundant urban insects.

It was first noted in London at South Kensington by R. J. Heckford on the 23rd of October, 1981. Since then I have found it, always in abundance, in Chelsea and Lampton, and on Hampstead Heath and Wanstead Flats, the only places in Greater London where I have looked for it. Outside London it has been found on common lime in Winchester and Oxford (P. H. Sterling, pers. comm.). Goater included it only as a doubtful species in his Hampshire list and Waters does not mention it at all in his list for the Oxford district.

Formerly it was strictly univoltine in Britain: woodland larvae collected in July never produced adults until the next year. However, the race on common lime is bivoltine (at any rate it was so in 1983). The reason may be climatic since it is bivoltine on the Continent and the British second generation may occur only in the "new" south-eastern colonies. But it is also possible that in the greatly increased population a proportion of early emergences occur, creating a capacity for a second brood.

I should be very pleased to hear of new facts, records or theories. There is some urgency if they are to be included in *The moths and butterflies of Great Britain and Ireland* Volume 2, which we are hoping to publish in the summer of 1984. A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

FRESH MOUNTAIN AIR. . . . ? — On the 18th of May 1983, whilst collecting on the western slopes of Mount Kenya, I observed two incidents of unusual(?) sexual behaviour in butterflies which prompt putting pen to paper.

It was a miserable day, the upper slopes of the mountain were hidden by cloud from about 9 o'clock and by 11 o'clock the rot had set in, the drizzle was almost constant and few butterflies were flying half heartedly during breaks in the weather.

The first incident occurred at about 3,000 metres, close to Percival's Bridge on the Naro Moru trail, built by the Royal Engineers in 1961. I was watching a female (?) specimen of the small *Actizera stellata* Trimen (Lep.; Lycaenidae) feeding on the pale pink blooms of *Erlangea fusca* (Compositae) when a fresh male *Harpenderyeus aequatorialis* Sharpe (Lep.; Lycaenidae) alighted on the flower head and, without any preamble, proceeded to pursue the *stellata* around the flower head in a most urgent and positive manner.

This 'Sexual harrassment' lasted about half a minute during which time *aequatorialis* frantically endeavoured to make contact with the tip of the *stellata* abdomen. *Stellata* seemed mildly irritated throughout and eventually flew off. It was not pursued. It is of interest that *aequatorialis* was by far the commoner of the two species at that time; no females were seen.

About mid day, some 500 metres lower down the mountain I was searching for the female of *Celias electo pseudohecate* (Lep: Pieridae) among some short wet grass on a steep slope by the roadside. Males were plentiful and most were fresh but females appeared to be just emerging. As luck would have it, I spotted my first female *electo* when I already had an *Appias* sp. in the net. Having captured the *electo* I despatched both and took them from the net, holding them on my open palm prior to boxing. A worn male *electo* which had been fluttering weakly close to the net (but not around the female prior to capture), then approached the female of his species and, unconcerned that she was now dead, tried to mate with her. I brushed the male gently aside and boxed the female; however, he was not to be discouraged and now redoubled his efforts to mate, this time with the dead female *Appias* resting on my palm. Obtaining no response he gripped her thorax and wing base area and almost succeeded in lifting her off my hand; if he had been in better condition he would perhaps have been successful. It was some moments before he gave up and flew off.

Are these events unusual? I have occasionally seen a butterfly pursue or make advances to an individual of a different (but similar) species, breaking off when the error is realised. I have never witnessed such prolonged and positive aberrant sexual behaviour before; perhaps there's something about the air on Mount Kenya . . . ?!

My thanks to Ms. Sylvia Gould of the Botany Dept., BM(NH), who kindly identified *E. fusca* from a colour print. — W. J. TENNENT, 1 Middlewood Close, Fylingthorpe, Whitby, N. Yorkshire.

COLEOPHORA OCHREA HAWORTH IN KENT. — On 14.viii.1982 I netted a largish *Coleophora* flying in the early evening over open downland near Gillingham; it was very worn but slight traces of silver were still visible and I was confident that it was *Coleophora ochrea*. I revisited the site on 4.vi.1983 to search for the larval cases on *Helianthemum* and upon the first patch of foodplant that I could find, after a few minutes I spotted a leaf that had been eaten by a coleophorid larva and closer inspection revealed two half-grown cases attached to a grass stem. A very careful 'hands-and-knees' search produced a further two cases within about fifteen minutes, one feeding on the upperside of a leaf, the other feeding on the underside. These four were all I was to find despite a concentrated search of about four hours.

I returned on the evening of 10.vi.1983 and was rewarded by finding nine cases in about 1½ hours, most of which were in their final stages of case development. The leaves upon which they were

feeding were very 'blistered' and almost completely hollowed-out. Several cases were found attached upside down to the developing flower heads or on adjacent foliage.

Further cases were found on 11.vi. and 15.vi. although by the latter date the cases were much scarcer and several recent feedings were found but the cases had moved off. The distribution of the cases was very localised, and all were found on the exposed open downland in longish grass; none were under the protection of bushes or at the edge of paths which has previously been suggested as preferred locations.

On the 13.vi. I visited an area of downland at Stockbury to collect fresh foodplant and pausing to glance at the *Helianthemum*, to my delight the first plant I peered at had been eaten by *C. ochrea* and within about half-an-hour further search produced nine cases.

I potted up a few plants leaving them in full sun and later reared a fine series between 20.vi. and 11.viii.1983.

On 23.vi.1907, H. J. Turner in company with Mr. J. Ovenden of Strood records in *Ent. Rec.* 24:281-282 finding larvae in abundance and full fed at Cuxton at a spot where some years before J. W. Tutt had taken the imagines in abundance.

The earliest known Kent record was from Alkham, Nr. Dover, published by H. T. Stainton on 1.vi.1859 in the *Manual of British Butterflies and Moths* volume 2.

Mr. A. A. Allen took two cases at Halling during a South London NHS meeting on 29.vi.1958 — neither case was reared. This locality was referred to by Mr. J. M. Chalmers-Hunt in his 1974 Presidential Address, but it should be noted that the date is therein wrongfully referred to as 29.v. In any case I visited the site on 27.v. 1981 and was disappointed to find the entire valley had been converted to arable and ley-farming for cattle-grazing. — N. F. HEAL, Fosters, Detling Hill, Nr. Maidstone, Kent.

THE FEEDING HABITS OF *PARORNIX* (LEP.: GRACILLARIIDAE).

— With regard to the note from N. F. Heal concerning the presence of *Parornix scoticella* (Stainton) in East Kent, comment on his misleading statement that he reared the moths from "*Phyllonorycter*-type mines" gives me the opportunity to correct a similar mistake of my own.

Parornix spp. mine only when young; the larvae later leave their mines and feed within folded leaves. In the case of *P. scoticella* this fold so closely resembles a mine that it has induced entomologists as distinguished as Professor Hering to suppose that the larva continues mining until it is full-fed. This species occurs on an apple-tree in my garden and I have had the opportunity to observe the larva making this deceptive spinning. Hypermetamorphosis takes place in *Parornix* at the second ecdysis; thereafter the larva's jaws are directed downwards and are used for grazing on the surface of the leaf. It can continue feeding in its mine only until it has finished eating the

parenchyma it can walk over, having been exposed by the removal of the epidermal cells above in the sap-drinking phase. It cannot enlarge the mine by chewing in a horizontal plane, nor can it make a fresh mine. The reason why *Phyllonorycter* can complete their development within their mines is that in their case hypermetamorphosis does not take place until the third ecdysis. Their additional sap-drinking instar enables them to make a larger epidermal mine in which enough parenchyma is exposed to last them until they are full-fed.

The very closely related *P. alpicola* (Wocke) makes an even more mine-like spinning on mountain avens (*Dryas octopetala*) and I incorrectly described it as a mine in *The field guide to the smaller British Lepidoptera* (p.55). Happily this was challenged by Dr. M. R. Shaw. When I sent him old examples of the feeding, he at first tended to agree with me, but after damping the leaves and opening up the feeding places he found that they were in fact folds and not mines. — A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

FREEZE-DRYING LEPIDOPTERA — AND A NOTE OF CAUTION. — For those such as myself who are fortunate enough to have access to the equipment, freeze-drying is an excellent method of preserving entomological specimens in all Orders, pinned or otherwise, without risk of distortion or loss of colour. It must surely be the most favoured method for drying pinned Odonata, in which Order the abdominal colours are very prone to fading. Its application extends to all other insects and other invertebrates where the retention of colour and morphological characteristics of the abdomen and other "soft-parts" are required. At the Passmore Edwards Museum, I use the technique on the wingless females of *Orgyia antiqua*, *Operophtera brumata* and other species which look most un-attractive in the cabinet if their abdomens have shrivelled — having no wings to catch the eye of the observer. The technique also works well on many 'micros' whose abdomens shrink to such an extent that they often all but disappear. The value of freeze-drying for display work is enormous, particularly for larvae.

My note of caution however, involves the use of plastazote as a setting medium. I normally use small squares of 7mm plastazote, cutting a groove with a scalpel blade, thus I can create a "perfect" groove for each specimen in very few moments. Recently however, I used a sheet of 7mm plastazote measuring about 15 x 20 cms, on which several specimens were pinned, and left this in the bottom of an Edwards EF — 2 freeze-drier for 15 days over the Christmas period. When I removed this from the freeze-drier, I found that it had distorted considerably and had, as a result ruined several specimens.

I cannot say why this distortion occurred, nor can I say whether the size of the sheet or the length of the run had any bearing on the

matter. I feel it advisable in future however, to stick to compressed cork setting boards for 'macros' and balsa wood for 'micros', and accordingly I am passing on this advice. — COLIN W. PLANT, Assistant Curator, Natural Sciences (Biology), Passmore Edwards Museum, Romford Road, Stratford, London, E15 4LZ.

Current Literature

Check List of the Lepidoptera of America North of Mexico including Greenland. Edited by R. W. Hodges et al. 4to., stiff wrapper, pp.xxiv + 284. E. W. Classey Ltd., Faringdon, Oxon and The Wedge Entomological Research Foundation, Washington, D.C. 1983. Price £46.40 inclusive.

This work, beautifully printed in England by the Cambridge University Press, is the first published list of the names of North American (North of Mexico) lepidoptera to appear since McDunnough's *Check list of the Lepidoptera of Canada and the United States of America* (1938-39), and according to the authors, represents the state of published and unpublished knowledge available to the end of 1978.

The introduction (pp.ix-xxiv) contains an indication of extra-limital and unplaced names; abbreviations; an outline of the classification adopted, together with detailed notes on the various families; the names of the authors and parts of the list that each prepared; and, finally, a bibliography of 94 items.

Then follows the check list itself (pp.1-159), printed in treble column with the names of the authors responsible for the various sections indicated throughout, usually in association with familial names. In all there are 11,233 species' names, each numbered in sequence, in addition to their subspecies and synonyms. With every one of these names, as well as with the generic names, the names of their authors and years of publication are given. New systematic information, such as new combinations, new synonyms and changes in status, is indicated throughout the list, and some infrasubspecific names are also included. A comprehensive index to all the names (pp.161-284) completes the work. — J. M. C.-H.

Entomology: A Guide to Information Sources by Pamela Gilbert and C. J. Hamilton. Pp. viii+237. Mansell Publishing Ltd. 1983. £18 p.f.

Owing to the great increase of late in the amount of entomological literature published, there is a very definite need for such compilations as the one under review. Written by two entomological librarians, this is not intended as a guide to the literature of particular groups of insects, but as an introduction and source book for entomology by subject. It consists mainly of a selection of standard texts, including broadly speaking, works the authors considered of most use, and is international in scope.

The book is divided up under subject headings, and in all contains over 1300 annotated consecutively numbered bibliographical items, arranged alphabetically under their respective subjects. These deal with a wide range of information sources and services, and among the many subjects covered are, for example, those concerned with the history of entomology, early literature, insects in art, taxonomy, nomenclature, identification, faunistics, dictionaries, glossaries, insect collections, suppliers, photography, journals, entomological libraries, entomological organisations, news letters and biological control.

The design and general format are commendable, with the various headings well indicated by the choice of a suitable arrangement of type faces and fairly large clear print on a good paper, the whole contained in an attractive durable cover. J. M. C.-II.

The Aphidoidea (Hemiptera) of Fennoscandia and Denmark. II.

The family Drepanosiphonidae. By Ole E. Heie. *Fauna Entomologica Scandinavica*, 11, 176pp., 4 coloured plates. Scandinavia Science Press, 1982. Ordinary price 150D.Kr (about £11); subscription price 105D.Kr. (about £7.60).

The Drepanosiphonidae dealt with in this volume correspond to the Callaphididae + Chaitophoridae of Börner's (1952) central European catalogue. The subfamilies, tribes, genera and species are keyed and the characters used are illustrated. Brief diagnoses of all taxa, family, subfamilies, tribes, subtribes, genera and the different morphs of each species are given. Many of the characters used are illustrated by line drawings and the four coloured plates illustrate 34 aphids. A summary of the biology of each taxon is given. The 104 species dealt with include 9 known from neighbouring territories but as yet unknown from Fennoscandia. The distribution of each species in Fennoscandia is summarised on pages 158-169. Four pages of references supplement the more extensive bibliography in the earlier (1980) aphid volume (9). The work is completed by an index to the genera and species included and their synonyms.

The group dealt with contains mostly aphids of permanent habitats, trees, sedges and grasses. An account of the British fauna of the group was provided by Stroyan (1977, *Handbk. Ident. Br. Insects* 11 4(a): viii + 130 pp.). Sixty nine species are common to both lists, the known British fauna includes some introduced southern European species; while the 33 additional species from Fennoscandia (half from sedges) include a number likely to be found eventually in north eastern Britain.

The whole work is produced to the high standards we have come to expect from the author, and is likely to remain for many years the standard reference work on the area. The author is to be congratulated — and encouraged to produce part III! — V. F. EASTOP.

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PLATE I



Lepidochrysops victori spec. nov.

Fig. 1: Male paratype (underside). Fig. 2: Male paratype (upperside).
Fig. 3: Female paratype (underside). Fig. 4: Female paratype (upperside).
Figures 1-5 times natural size.

A NEW SPECIES OF *LEPIDOCRYSOPS*
FROM THE EASTERN CAPE, SOUTH AFRICA

No. 2

By E. L. PRINGLE, B. A. (NATAL), LL.B. (U.C.T.)*

Lepidocrysops victori spec. nov.

This *Lepidocrysops* combines the characteristics of *L. loewensteini* Swanepoel (1957) and *L. ketsi* Cottrell (1963), insofar as it resembles the former on the upperside, and the latter on the underside.

The butterfly's salient features will be described hereunder, and comparisons made with the aforementioned species.

Male: Forewing and hindwing upperside.

Ground-colour dark greyish-brown, similar to that of *L. loewensteini*, but slightly greyer in appearance. Like *loewensteini*, this insect also exhibits (in fresh specimens) a faint dusting of yellow at the base of the costa on the forewing. This species is readily distinguished from *L. ketsi* on the upperside by the following features:

- (a) The ground-colour of *L. ketsi* is a uniform medium grey; *L. victori* is a much darker greyish-brown.
- (b) *L. ketsi* never shows a faint dusting of yellow scales at the base of the forewing costa.
- (c) The wing-shape of *L. victori* is much more rounded on the distal margin and apex of the forewing than that of *L. ketsi*, being strongly reminiscent of *L. loewensteini* in this regard.
- (d) The cilia of *L. victori* are much less prominent than those of *L. ketsi*, and are not as distinctly chequered. In some cases, the cilia of *L. victori* are hardly invaded by any colour at all — a characteristic never shown by *L. ketsi*.
- (e) The distal spots on the hindwing are only very faintly apparent — unlike those in the majority of specimens of *L. ketsi*, where this series of spots are very pronounced. These distal spots are black, and are not edged outwardly with white, as is the case with males of *ketsi*.

It is interesting to note that most specimens of *loewensteini*, unlike both *victori* and *ketsi*, have pronounced yellow streaks bordering these distal spots inwardly.

Forewing underside.

Ground-colour greyish-brown, showing a greater degree of brown colouration than *L. ketsi*, which exhibits a flat grey ground-colour on the underside. Specimens did not, however, exhibit the extent of olive brown in the ground-colour of the wing as seen in *L. loewensteini*.

The median series of spots are joined together, as in both *loewensteini* and *ketsi*, and run the whole breadth of the wing from vein 10 to vein 1b. In comparison with *L. ketsi*, there is an extreme reduction in the white edging round each of these spots, as well as round the discoidal spot: This characteristic is also evident in *L. loewensteini*. However, the spots of this median series are much broader than those of *loewensteini*; and the spot in area 4 is frequently produced so far inward that it fuses with the discoidal spot — a

*Huntly Glen, Bedford, 5780, South Africa.

characteristic never evident in specimens of *loewensteini*. Also, this median band is markedly more sinuous than in *loewensteini*.

Hindwing underside.

The foregoing concerning the ground-colour of the forewing underside is also applicable here. Generally, the hindwing markings of this insect are identical to those of *L. ketsi*, and reference may be made in this regard to the description of the latter insect. However, the series of sagittate white markings occurring postmedially are generally more heavily pronounced than those of *L. ketsi*.

Female: Forewing and hindwing upperside.

The base-colour of all these wings is a deep brown, as opposed to the dark greyish brown of the males. As is the case of most female *Lepidochrysops*, all four wings are more elongated than in the male. Like the male, the female of *L. victori* exhibits a faint dusting of yellow scales at the base of the forewing, when fresh. This is a characteristic not seen in females of *ketsi*.

Further, the females of *L. victori* are of a darker, richer brown ground-colour than those of *L. ketsi*.

As in *L. ketsi* and *L. loewensteini*, the base of all wings on the upperside is lighter in colour than the outer margin. However, there is no tendency in *L. victori* towards the dappled colouration seen in females of *ketsi*: instead, there is a gradual transition from lighter brown at the base of each wing, to darker brown towards the margin.

In this respect, the females are similar to those of *L. loewensteini*. They may, however, readily be distinguished from the females of *loewensteini* by their markedly lighter ground-colour.

What was said above concerning the cilia of the male applies equally to the cilia of the female.

As in the males, the distal spots on the hindwing upperside are much less pronounced than in females of *ketsi*, although (unlike those of the males) they are edged outwardly with white.

Female underside.

Since this is identical to that of the male, reference can here be made to the description of the male underside.

It must be noted that the plate featuring the insect in this description is not entirely satisfactory inasmuch as the golden sheen on the uppersides of the specimens concerned is overemphasised; the ground colour of both surfaces of the wings, too, is slightly greyer in appearance than is illustrated.

Comparison of the genitalia of the "Huntly Glen" *Lepidochrysops* with those of *Lep. ketsi* Cottrell (1965).

The *uncus lobes* are more produced than those of *ketsi*.

The *falces* are considerably broader in their downward, more basal section, and they lack the sudden, fine reduction in thickness just before the hooked extremity which occurs in those of *ketsi*; while the hook is slightly less well developed than in the latter taxon.

The *valves* can be very similar in each taxon — i.e., without the development of the "callus", of Cottrell; but in one example of *ketsi* there was a very well developed callus, and it is possible that a callus could occur in the case of some examples of the present species.

In the *dedeagus* the lateral plates, of Cottrell, retain their depth for a greater length before the dorsal dip, than in the case of *ketsi*, and there is some tendency for the distal portion after the dip, when viewed laterally, to be less shallow in the present taxon. The "*lateral flanges*", of Cottrell, at the basal

NEW SPECIES OF LEPIDOCRYSOPS FROM THE EASTERN CAPE 139
end of the *aedeagus* are broader in the present taxon and without the rather pronounced "neck" of those of *ketsi*.

Comparison of the genitalia of the "Huntly Glen" *Lepidochrysops* with those of *Lep. loewensteini* Swanepoel (1951).

The *falces* are much wider in their first, more basal section, and the following curvature on the inner side is comparatively abrupt, against the smooth and much wider curvature in *loewensteini*. The following, upward portion of the *falces* is slightly less slender in the former than in the latter taxon. In the former the final curvature forming each hook occurs smoothly, but in *loewensteini* it is preceded by a slight irregularity, inwards and then outwards.

The *valves* do not seem to show any significant difference in either taxon. In both there is a limited degree of broadening some way before the hooked portion, in some examples; but no teal callus has so far been observed in either species.

In the *aedeagus*, the distal portion after the dorsal "dip" appears in the first species to be rather less shallow than in *loewensteini*, the lateral view. In the former, the lateral flanges at the basal end of the *aedeagus* are broader than in the other taxon.

This interesting *Lepidochrysops* was discovered by Mr. Victor Pringle in February 1973, flying at a high altitude on the foothills of the Great Winterberg. The insect was observed to fly in a fairly restricted area, where it appeared to be associated with a species of *Selago*, which is presumed to be the foodplant of this species. Subsequently two more colonies of this insect have been found along the same range of mountains, at approximately the same altitude.

When the species was originally collected, it was noted to occur in the same vicinity as a colony of *L. variabilis* Cottrell — specimens of *L. variabilis* were seen to congregate in typical fashion on the summit of the ridge, while the colonies of *L. victori* were noted to occur in restricted areas about the slopes of the same ridge. Unlike *variabilis*, *L. victori* was never seen to congregate on peaks.

The author notes that this difference in habits is an important differentiating feature between *variabilis* and *ketsi*, (see "A Study of the *methyma*-Group of the Genus *Lepidochrysops* Hedicke (Lepidoptera: Lycaenidae)" by C. B. Cottrell (*Mem. ent. Soc. S.A.*, No. 9:1-110, June 1965) and this led to speculation that this insect may indeed be a high altitude race of *L. ketsi*.

However, observation over a ten-year period revealed that, unlike *ketsi*, this insect never emerged in Spring or Mid-Summer; the earliest records of emergence being during mid-February. It remained a puzzle as to why this insect should restrict its flight period to February and March, whereas *Ketsi* had been noted to emerge in October, and has been recorded in all months until March.

Then, on the 27th November, 1979, a colony of insects, identical in all respects to specimens of *ketsi* recorded from Coega, Line Drift and Grahamstown, was discovered in a remote valley at the foot of the same ridge as that upon which *L. victori* flies. This colony was noted to be at its peak during November and December,

and to be over before the emergence of the first specimens of *L. victori*. Since this colony of insects is approximately only two kilometers distant from the nearest colony of *L. victori*, the author has no hesitation in allocating specific status to the latter insect.

It has given the author great pleasure to name this insect in honour of its discoverer, whose life-long interest in nature has contributed so much to present knowledge of the fauna and flora of the Winterberg region.

The author wishes to place on record his gratitude to Mr. C. G. C. Dickson for doing the genitalia preparations for this paper and for the other valuable assistance he has rendered.

HOLOTYPE: "Huntly Glen", Bedford, South Africa. February 1973 (V. L. Pringle).

ALLOTYPE: "Huntly Glen", Bedford, South Africa. February 1973 (V. L. Pringle).

PARATYPES: "Whytebank", Bedford, 1 ♀, 18/3/75 (V.L.P.); "Many Waters", Bedford, Bedford, 4 ♂, 5 ♀, 23/3/1975 (V.L.P.); "Huntly Glen", Bedford, 8 ♂, 1 ♀, 18/2/1978 (E. L. Pringle); "Huntly Glen", Bedford, 2 ♂, 1 ♀, 18/2/1978 (V.L.P.); "Huntly Glen", Bedford, 1 ♂, 2 ♀, 15/2/1978 (E.L.P.); "Huntly Glen", Bedford, 1 ♂, 15/2/1978 (V.L.P.); "Huntly Glen", Bedford, 1 ♂, 8/2/1976 (E.L.P.); "Huntly Glen", Bedford, 1 ♂, 28/3/1982 (E.L.P.); "Huntly Glen", Bedford, 1 ♀, 28/3/1982 (A. B. Pringle).

The Holotype and Allotype have been donated to the British Museum.

A NEW LOCALITY FOR *STIGMELLA SAMIATELLA* (ZELLER). — Three plain brassy-coloured male Nepticulids with black heads and white collars and eye-caps, taken from a light-trap at Peasmarsh, E. Sussex on 17-21.vii.1983 could not be identified until a genitalia slide was made. Even then I failed to recognize the species, and sent a drawing to Professor C. Wilkinson of Amsterdam, who kindly sent me the good news that I had *Stigmella samiatella*. Emmet (1976, *Moths and butterflies of Great Britain and Ireland* 1 and 1981, *The smaller moths of Essex*) has recorded *S. samiatella* from Radnorshire and from both vice-counties of Essex. In the extreme east of Essex (VC 19) it is common but very local. These are the only British records, but surely the species must be overlooked elsewhere. — E. C. PELHAM-CLINTON, Furzeleigh House, Lyme Road, Axminster, Devon, EX13 5SW.

POLYPOGON STRIGILATA L. (LEP.: NOCTUIDAE): A FURTHER NOTE AND A CORRECTION. — After the interest shown in my paper on this species (vide *Ent. Rec.*, 95:238-241), I may add that the moth still occurs locally in East Sussex. I should also like to point out that my references to Berkshire should in fact refer to North Hampshire. — B. ELLIOTT, "Threepieces", Vernon Lane, Kelstedge, Derbyshire.

BREEDING THE LARGE COPPER,
LYCAENA DISPAR HAWORTH

By R. J. D. TILLEY*

The Large Copper butterfly, *Lycaena dispar* Haworth, exists as three subspecies, *L. dispar dispar*, the extinct British form, *L. dispar batavus* Oberthur, which closely resembles *dispar*, and *L. dispar rutilus* Werneburg. The first two of these are single brooded while the second is double brooded. Although this is a significant difference between the two surviving subspecies, information regarding rearing either of them is rather sparse in the literature and little attention has been focused upon the differences between the two subspecies from this point of view. Recently, however, Brooks and Knight (1982) have given a description of the single brooded race which sketches out the life cycle of this insect. An equally recent account of the double brooded subspecies has not been located to date, although it is of some interest to note that this is the subspecies that Frohawk (1924) describes in detail. The present note records the results of rearing *L. dispar rutilus* during the summer of 1983.

The Large Copper was found in a number of meadow locations between Nancy and Charmes in the department of Meurthe and Moselle in North Eastern France towards the end of June 1983. A pair of female butterflies caught on the 2nd July were put into a flowerpot of about 10" (25cm) diameter together with some leaves and stems of the common Broad-leaved Dock (*Rumex obtusifolius*) and a few wild flowers for food. The pot was covered with netting and placed in sunshine. During the day the pot was moved from sunshine to shade, depending upon conditions, so as to keep the temperature as equable as possible. The butterflies laid freely under these conditions. Ova were deposited on the undersides of the Dock leaves, sometimes singly and sometimes in short strings of from two to five eggs. They resembled grey flattened spheroids to the eye and under a glass revealed the sculpturing typical of Lyceanid ova. When it was discovered that ordinary Dock was a possible food plant wild plants were searched in the localities where the butterflies themselves were to be found. It is of some interest to report that a dozen or so ova were discovered in this way, although only the common Broad-leaved Dock was briefly examined. It therefore seems that in this region of France dependence upon Water Dock (*Rumex hydrolapathum*) is not total.

Ova began to hatch on 6th July and all but a few had hatched by the 8th July. The larvae commenced feeding at once and behaved in the same way as those described by Frohawk, that is they ate

*1 The Paddocks, Lower Penarth, Cardiff CF6 2BW, South Glamorgan.

into the lower surface of the Dock leaving narrow transparent channels bounded above only by the thin upper leaf membrane. Immediately on eclosion the larvae were a yellowish colour, but soon after they started to feed they took on the colour of the Dock leaves themselves, a rather deep green tone.

Initially the larvae all fed rapidly, but after a week it became apparent that there were two groups developing. One of these continued to feed rapidly and began to pupate on 22nd July. Until pupation all these larvae remained green in colour, matching the shade of the Dock leaves, as remarked. The pupae from this forward group began to yield adult butterflies on the 3rd August and all imagines had emerged by 9th August.

These butterflies were rather smaller than the wild examples taken at the start of July but otherwise resembled them closely. No pairings were achieved and the majority of the insects were released near to where the wild parents were captured. For this fast developing group we can summarise by recording that the ova lasted for approximately 6 days, the larval state for approximately 16 days and the pupa for approximately 10 days.

The other part of the batch of larvae did not develop after the second moult. Instead they took on a reddish hue which matched the colour red that appears on Dock leaves during the latter part of the summer and the autumn. These larvae settled onto the undersides of the Dock leaves provided for food and became dormant although it was only the middle of July. They did not appear to lay down a substantial mat of silk to cling to, but as a microscope was not available it is not possible to rule out completely the possibility that a thin layer was present. As the leaves were replaced, the larvae were brushed off and proceeded to re-establish themselves on other leaves. This continued until all the fast developing larvae had pupated, after which the remaining larvae were left undisturbed. Over the course of the next two months a small percentage of the dormant larvae did recommence feeding and development, to produce butterflies in the early autumn. However the majority remained dormant and are at present (December 1983) still in this state. The fraction of larvae which adopted this strategy amounted to a little less than a half of the total number. The conclusion is that a significant proportion of the larvae from the first brood passed into diapause rather than continued development to the adult stage.

In order to compare the development of the first brood with that of the second generation of butterflies one or two wild females were taken in the same locality as before on the 7th and 9th August. As previously these females laid readily on Dock when confined in a large flowerpot. Ova collected on the 10th August began to hatch on the 15th August and all the ova collected had hatched by the 16th August. In this respect they behaved in a similar way to those of the first generation in that the egg stage lasted for about 6 days. After

hatching the larvae fed rapidly for 10 or 11 days, after which they moulted. They then appeared almost to stop feeding, took on the same reddish hue as the earlier diapausing larvae and took up positions on the undersides of Dock leaves. All of the larvae behaved in an identical manner in this respect, with none showing any tendency to continue development fully. At present these larvae appear to be alive and are outside.

The results recorded here have brought to light two interesting facets of the development of the *rutilus* subspecies as it occurs in North-Eastern France. Firstly, it is certain that the larvae feed readily upon the common Broad-leaved Dock in captivity and that the females will lay on this plant under the same circumstances. The fact that some ova were found on Broad-leaved Dock in the wild also indicates that this food-plant is utilised under natural conditions. The second point to note is that the larvae from the first generation seem to split into two groups, one of which completes its development rapidly, while the other goes into diapause, probably after the second moult. The diapause group can be differentiated from the non-diapause group by colouration.

This aspect of diapause is of interest as it links together the two subspecies and reveals that the *rutilus* form has a flexible pattern of development which may span the whole range from the apparently strictly univoltine development of *dispar* or *batavus* to a strictly bivoltine form of *rutilus*. Clearly the present results are of a preliminary nature and further breeding experiments will now be needed to clarify matters further. In particular it will be of some importance to determine whether the diapause in the first generation larvae and the second generation larvae is controlled by the same external parameters. In this case it would seem reasonable to test the influence of daylength and temperature here as both of these have been shown to have a considerable effect on the diapause or non-diapause behaviour of many insects including lepidoptera (Danilevskii, 1965; Beck, 1968; Saunders, 1976). It is possible, however, that more than two factors will determine whether a larva enters diapause, and it is equally possible that one population may differ from another in this respect.

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A STUDY OF *HERMINIA TARSICRINALIS* (KNOCH),
THE SHADED FAN-FOOT (LEP.: NOCTUIDAE)
IN THE BRITISH ISLES

By B. ELLIOTT* and B. SKINNER**

History

The first occurrence of this species in the British Isles dated from July 1965, when a specimen was taken on the Suffolk coast at Thorpeness by Mr. E. C. Pelham-Clinton and the late Mr. Robin Mere. Pelham-Clinton (1966) gave details of the diagnostic characters which separate *Herminia tarsicrinalis* (Knoch) from *H. tarsipennalis* (Treitschke) and *H. nemoralis* (Fabricius). He also mentioned that on the continent it is one of those species presently extending its range northwards, and added that the stated pabula are dead leaves of blackberry, raspberry and *Clematis*.

The possibility that this species was resident in Suffolk was made likely by the capture of a further specimen in the same general area two years later by Dr. A. A. Myers. The status of this species was next discussed by Dr. C. G. M. de Worms (de Worms 1978) who surprisingly considered it to be a casual immigrant.

Investigation of its status

The first step was to discuss the habits of the moth with Mr. Stig Torstenius of Stocksund, Sweden, who advised that the species was closely associated with bramble thickets and could be obtained by placing the moth trap close to or preferably in the middle of a thicket.

Our first visit to the Thorpeness district took place on the 20 June 1982. The area had an abundance of large bramble thickets among which we sited a number of traps, but because of poor weather conditions and perhaps the early date we saw no sign of our quarry. We returned on the 9 July and were pleased to find our visit coincided with optimum weather for recording moths. Several lights were operated in the same places as our previous expedition, and a sugaring round was laid out, since from experience its two congeners are frequent visitors to the sugar patch. That night we recorded 142 species of macrolepidoptera without seeing *tarsicrinalis*, and we concluded that the original specimens were probably vagrants from another area. Accordingly the next day we investigated other coastal and also inland areas, and that night, with the favourable conditions still prevailing, our chosen inland site

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produced over twenty, mostly worn, male *tarsicrinalis*, all appearing before midnight, and confirming our preconception that this species was indeed resident. The following night the species appeared again in good numbers, including several females, and was found to occupy a larger area.



Fig. 1 *Herminia tarsicrinalis* (Knoch). Male (left), female (right). Natural size.

Identification characters

H. tarsicrinalis (fig. 1) is easily recognised by the pale ochreous-brown colour of the forewing, an almost straight subterminal line, and a darker ochreous-brown median fascia. In *H. nemoralis*, which is generally smaller, the subterminal line curves outwards from the tornus to the apex. In *H. tarsipennalis*, which is usually much larger, the ground colour of the forewing is a darker shade of brown.

Life history and description of immature stages

Ova were freely laid by captive females by placing them in small plastic boxes lined with netting. The newly laid ovum is pale green, shining, hemispherical, and rounded at the base; the coronal area is reticulated. The head becomes visible prior to hatching and half the eggshell is eaten by the newly hatched larva. The egg stage lasted ten days and the first larva hatched on 23 July.

The first instar larva resembled that of a geometrid and was very active. It is pale translucent green in colour with a darker olive-green dorsum, and a pale green head with five black setae emanating from raised black papillae.

A mixture of dandelion, dock, knotgrass, raspberry and bramble was offered and the larvae showed a preference for bramble with a predilection for withering and even mouldy leaves; a habit of this group. The second instar began between the 28 July and the 3 August and at this stage the larva is 6mm in length, has well-developed

prolegs, and a basic brown ground colour with a darker brown dorsal area. The larvae were kept in an unheated room, average temp. 65°F., and by the 14 August the larger had reached the fourth instar, suggesting that they were going to produce a second generation in the autumn. The full-grown larva is 18mm in length and has a small head in relation to its body, the latter being somewhat flattened so that the larva appears to be closely appressed to its pabulum. The head is dull brown, freckled with darker brown spots. The body is light brown with each segment having dorsally a darker brown v-shaped area pointing towards the anal end, and laterally an oblique reddish-brown dash running down to the black spiracle. The body is lightly covered with vestigial setae. The twelve larger larvae pupated between the 26 August and 1 September, and without forcing emerged between 6 and 24 September.

The pupa is 11-12mm in length and light brown in colour. It is secured in a flimsy cocoon comprising of a few strands of silk pulling the tissue paper or foodplant debris together.

The remaining dozen larvae became rather inactive and showed no signs of pushing ahead and so were transferred to an unheated garage. In late February an inspection revealed that several larvae had died and on introducing some bramble leaves the survivors started to feed a little, suggesting that they like to nibble during the winter months. These larvae eventually became full fed in early April and pupated towards the end of the month; the adults emerging about the middle of May.

Conclusions

A further visit to the site in 1983 showed the species to be equally plentiful and well established, and in the same year others reported it several miles away from a new locality. It is likely that it will be found elsewhere in Suffolk, and possibly in other counties, now that its type of habitat is better understood.

Acknowledgements

We should like to thank Mr. E. C. Pelham-Clinton for permission to quote freely from his article and Mr. D. E. Wilson for preparing the photographic plate.

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THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1983

By R. F. BRETHERTON* and J. M. CHALMERS-HUNT**

(Continued from page 91)

ANNEXE I

Names of Recorders

D. Adams per CRP; Rev. D. J. L. Agassiz; J. Aldridge; M. Albertini; A. A. Allen; P. Andrewes per RIL; L. Annable; A. Archer-Lock; R. M. Arkell; G. F. Arnold; V. Arnold; F. Ashmore; T. Aston; D. W. Baldock; P. J. Barden; B. R. Baker; P. J. Baker; A. Barr per RIL; R. D. G. Barrington; A. Batten per CRP; R. Beale; D. Beech per AFJG; R. A. Bell; T. Bennett per HEC; Dr. N. L. Birkett; D. Bishop; J. E. L. Bishops; C. H. S. Blathwayt; P. Bliss per DCGB; K. G. M. Bond; D. J. Brazier per E. M. Raynor; R. F. Bretherton; J. Briggs; Dr. R. Bristow; A. T. Bromby; D. C. G. Brown; R. I. Brown; G. Burgess per RGSW; Grp. Capt. L. W. Burgess; R. Burrige per V. Tucker; J. P. T. Bury; John Burton; Miss S. M. Butlin; K. Butterfield per G. Prior; Martin Cade; R. N. Cain; Colin Campbell; Dr. J. L. Campbell; M. Cant; C. Carter per G. Prior; David Carter; G. P. Catley; Mrs. Cawkwell per CRP; J. M. Chalmers-Hunt; S. Chapman; R. G. Chatelain; B. Chesney; H. E. Chipperfield; I. C. Christie; S. Church per CRP; Dr. J. H. Clarke; R. Colack per CRP; L. T. Colley; R. C. Collier; G. A. Collins; P. Combridge; R. Cook; P. Cooper; M. H. V. Corley; W. L. Coster per B. Skinner; P. Cowdell per J. Duddington; Dr. J. C. A. Craik; B. Croach per CRP; D. P. Crossland per APF; R. Crowther per H. Woollorton; J. Culpin; S. Curson per CRP; Sir John Dacie; P. A. Davey; A. H. Davis; R. E. Davis; T. Deane per D. W. Kydd; E. E. Deekes; R. C. Denning; Dr. R. L. H. Dennis; A. J. Dewick; S. F. Dewick; D. Dey; A. Dobbs; A. H. Dobson; Doncaster Museum; Dorest Environmental Centre; J. Duddington; Jeffrey Dyson; R. C. Dyson; Lt. Col. C. G. Eastwick-Field; C. H. Edwards; R. F. Eley per HEC; M. Elvidge; Lt. Col. A. M. Emmet; B. Elliott per B. Skinner; D. W. Emley per RGSW; M. A. Enfield; K. G. W. Evans; A. S. Ezard per PQW; R. Fairclough; Dr. J. Feltwell; Crispin Fisher; M. J. H. Foley; J. Forbes per ME; A. P. Foster; A. F. J. Gardner; P. J. Garner; S. V. Gauld per RIL; P. J. Gent; N. Gill; K. A. Gossling; Fr. A. Green; J. Green; J. A. C. Greenwood; J. M. Greenwood; E. Griffiths; Mrs. S. J. Grove; G. Gush; M. Hadley; E. C. M. Haes; L. A. Haldane per BWM; M. R. Hall; N. M. Hall; M. Halsey; A. J. Halstead; E. T. Hancock; T. W. Harman; Dr. M. W. Harper; Mrs. E. Harris per J. Green; Colin Hart; N. Harwood per PQW; R. F. Haynes; R. Hayward; N. F. Heal; J. Heath; C.

*Folly Hill, Birtley Green, Bramley, Guildford, Surrey, GU5 0LE.

**1 Hardcourts Close, West Wickham, Kent, BR4 9LG.

Hindley; A. & N. Hobbs per CRP; L. P. Hollindale; C. Holmes; H. & M. Huggins; G. Hyde; D. Hursthouse; R. S. Ingram per PQW; R. M. Inskip; P. Jack; Mrs. E. D. Jackson; S. M. Jackson; J. P. Jewess; C. Jones; M. Jordan; Mrs. E. D. Kidd; Dr. R. P. Knill-Jones; S. A. Knill-Jones; D. W. Kydd; C. Lane; Dr. J. R. Langmaid; A. Lansbury per G. Prior; J. Lavery per RFH; J. Leedal per J. Briggs; D. Lees; W. B. Lepper; Miss H. Lefevre; R. Leverton per CRP; R. Lewington per BRB; Mrs. A. Lloyd-Jones; Miss L. Loach; R. I. Lorimer; V. Lorimer per RIL; R. Lovell-Pank; Dr. C. J. Luckens; Mrs. A. D. Lyle; Dr. B. J. MacNulty; I. A. McGeoch; I. McGuiness; I. McInnes; S. C. Madge; N. E. Marchant; H. B. Marshall; M. E. Massee per APF; C. L. Massey per PQW; P. M. Mayer; Mrs. J. Mayhew; J. R. Medcalf; B. Medland; T. Melling; R. K. Merrifield; P. Milne; T. R. Milsom; J. M. Mitchell; B. W. Moore; J. W. B. Moore; I. K. Morgan; Mrs. J. M. Morgan; R. K. A. Morris; G. Moss per RGSW; Dr. A. A. Myers; S. Nash; J. Newberry. RSPB; D. Newman; J. Newnham per CRP; R. A. Norman per RGSW; W. J. Norton; Dr. J. P. O'Connor; H. O'Heffernan; Oceanographic Institute; D. J. Odell; A. G. Owens; A. Palmer; Dr. H. G. Parker; M. Parsons per CRP; A. Pearson per D. C. Lees; Dr. T. N. D. Peet; E. C. Pelham-Clinton; K. Pellew; H. J. Phelps; J. W. Phillips; B. Pickess; A. J. Pickles; Mrs. R. Pike per AFJG; R. E. M. Pilcher; Rev. S. C. Pittis; C. W. Plant; S. Pooles; B. I. Porter; Dr. D. I. Porter; J. Porter; B. O. Portland per NMH; D. Prance; C. R. Pratt; G. Prior; G. A. Pyman; A. Quinian; B. Rabbits; J. T. Radford per CRP and B. Skinner; E. M. Raynor; P. Raynor; R. W. J. Read; Mrs. J. Redgwell; Mrs. D. R. Rees; R. C. Revels; Rigden per E. S. Bradford; A. Riley; I. Rippey per RFH; M. Rogers, Portland B. O.; C. C. Rollins; A. Rouse; W. L. Rudland; K. Ruff per CRP; A. D. A. Russwurm; L. P. Samuels; D. Sampson per PQW; J. A. Sage; P. Sankey-Barker; D. L. F. Sealey; P. Sharp; D. J. Sharrock, 'British Birds'; D. Sheldon; D. Shepherd per G. Prior; T. B. & M. A. Silcocks; B. Skinner; B. E. Slade; B. Slocock per G. Prior; J. Smith per G. Prior; Dr. J. H. N. Smith; P. Smout; R. A. Softly; A. Spalding; B. R. Spence; B. R. Squires; B. Statham per B. Skinner; B. R. Stallwood; R. W. C. Steel; Lt. Col. D. H. Sterling; P. H. Sterling; R. C. Stone; Miss T. Strange; D. D. B. Summers; S. Swanson; D. Swinton; R. Taffs; M. H. Taylor, Perth Museum; C. F. Tebbutt; J. Tillotson; R. J. Thomas; S. A. B. Thompson; R. A. Thorne; J. Thurlow; D. A. Trembath; W. G. Tremewan; J. K. Trotman per G. Prior; R. S. Tubbs; V. Tucker; N. E. Turner; M. W. F. Tweedie; D. Unsworth; T. W. Upton; M. Ventom; J. M. Walters; P. Waring; D. Warren per B. Skinner; Miss E. Warren; R. B. Warren; R. G. S. Warren; A. Watchman per HEC; N. R. Webb; K. F. Webb; B. Westwood; P. D. Whitehead; J. Whiteside per J. Briggs; E. H. Wild; D. E. Wilson; J. Wilson; P. Q. Winter; I. Woiwod; H. Woollorton; N. G. Wykes; G. H. Youden.

ANNEXE II

Suspected immigrants of resident species are marked*. Unless otherwise indicated, single examples are referred to. For nocturnal species dates given are as far as possible of the beginning of the night and are of examples seen in light traps or otherwise at light. Recorders' names are abbreviated to their initials, except when two or more recorders have the same initials, in which case their names appear in full (see Annexe I: Names of Recorders).

**ETHMIA BIPUNCTELLA* F. HANTS S. Highcliffe, 16.8, with *R. sacra* and *M. vitellina* (EHW). Possibly immigrant, as there is none of the foodplant, *Echium*, nearby.

CRYPTOPHLEBIA LEUCOTRETA Meyrick. HANTS S. Southsea, 10.8 (JRL). Possibly from imported oranges.

DARABA LAISALIS Walker. BEDS. Luton, 30.7 (Webb, *Ent. Rec.*, 96: 123). SURREY. Wimbledon, 18.7 (Dacie, *ibid.*). Perhaps artificially introduced.

URESIPHITA LIMBALIS D. & S. (3) CORNWALL W. Rosewarne, 1.10 (per A. Riley & IW). DORSET. Portland East Cliff, 24.9 (NMH). GUERNSEY. Lethene, 24.8 (TNDP).

EURRHYPARA PERLUCIDALIS Hb. (16) ESSEX S. 7/27.7, twelve (AJD, SFD). East Ham, 15.7, in a suburban garden (CWP). KENT E. Murston, 4.7 (NFH). Stodmarsh, 22.7, two (JMC-H). Probably now resident in both counties.

DIASEMIA LITTERATA Scop. SOMERSET S. Porlock, 29.7 (ECP-C).

PALPITA UNIONALIS Hb. (c.12). CORNWALL W. Mawnan Smith, 20.8, male (APF). Coverack, 23.9 (ECP-C). Lizard, 24.9 (DCGB). ESSEX S. Bradwell-on-Sea, 4.10 (SFD). HANTS ISLE OF WIGHT. Freshwater, 22.9, 30.9 (SAK-J). HANTS S. Havant, September (JWP). KENT E. Boughton Aluph, 4.10 (MAE). SURREY. Egham, 3.10 (MJ). SUSSEX E. Peacehaven, 26.9 (CHP). GUERNSEY. Lethene, 24.9/1.10, a few (TNDP).

MARUCA TESTULALIS Geyer (2). SURREY. Wimbledon, 29.7 (Dacie, *Ent. Rec.*, 96:28). CORNWALL W. Mawnan Smith, 15.8 (APF, *ibidem*). The capture of these two specimens simultaneously with other rare immigrants indicates that it is not only artificially introduced in Britain, as was previously supposed.

PAPILIO MACHAON L. (3) KENT E. Whistable, n.d., in a garden, missed but identification definite (C. Hindley per TWH in litt. 14.6.83). SUSSEX E. Brighton, 8.8, two on buddleia (AQ).

COLIAS HYALE L. or *C. AUSTRALIS* Vty. (5) CORNWALL W. Goldsithney 24.9, male, examined before release (EG). DEVON S. Ernsett, Plymouth, 29.7, male captured and released during marking experiments on *C. crocea* (EG). DORSET. Portland B.O., 1.8, 2.8, the first captured and closely examined by several ob-

servers before release; the second closely seen (MR per NMH). HANTS S. Highcliffe, 29.7, watched for some time with c.20 *C. cardui*, but not caught owing to lack of net (EHW).

LAMPIDES BOETICUS L. (2) SOMERSET S. Staple Fitzpaine, 7.8, closely identified by an observer with knowledge of the species in East Africa (LAH per BWM, *Ent. Rec.*, 96: 33). GUERNSEY. 3.9, one seen by a reliable observer (per TNDP).

*NYMPHALIS POLYCHLOROS L. (2) HANTS ISLE OF WIGHT. Freshwater, 29.7, flew into sitting room (SAK-J). SUSSEX E. Northiam, 29.7, settled on ivy (BC per CRP).

NYMPHALIS ANTIOPA L. (10) BERKS. Crowthorne, 23.9 (Chalk, *Bull. Amat. ent. Soc.*, 43:81). CORNWALL SCILLY. St. Mary's, mid October (PA per RIL). HANTS ISLE OF WIGHT. Totland Bay, reported 5.9 (Kiszely per Knill-Jones, *Proc. Br. ent. nat. Hist. Soc.* 17:44). Saltfleetby-Theddlethorpe dunes, 8.8, flying off sea with *C. crocea* and many *Vanessids* (MEM, warden, per APF). Lincs N. Southrey to Bardney old railway, 20.9, two together on bramble blossom (P. Cowdell per J. Duddington). MIDDLESEX. Euston Road, London, 27.10, flying at mid day (DPC per APF). NOTTS. Lound, 9.9, flying along riverside (DH). OXON. Aston Rowant, 25.9 and 4.10 (JKT per GP). SUSSEX E. Woodingdean, Brighton, 30.8 and two next days (KB per CRP). WORCS. Knighwick, late 8, on buddleia (Mrs. E. Harris per J. Green).

*POLYGONIA C-ALBUM L. (2) DEVON S. Axminster, 26.9, two males in light trap with other immigrants; none seen in the neighbourhood by day (ECP-C).

DANAUS PLEXIPPUS L. (c.13) The occurrence of this species is supported by a meteorological check of wind streams kindly provided by Mr. P. A. Davey. CORNWALL SCILLY. Treco, early October, several, 20.10, two (PA per RIL). CORNWALL E. Rame Head, 25.9, watched through binoculars by RT and others (per SCM). Mouth of Fowey river, 24.9, near the sea, seen at 20 yards and watched with binoculars, flying over hawthorn bushes (RCC). DEVON S. Soar Mill Cove, 25.10, seen by R. Burridge (who had experience of it in America) (per VT). DORSET. Dorchester, seen c.19/25.9; Portland B. O., 24.9 at dusk and 25.9 early a.m., closely seen (A. H. Davis). HANTS ISLE OF WIGHT. St. Catharines Point, 20.6 (DJB per EMR). HANTS S. Pennington Marsh, 24.9 (PC). SUSSEX W. Chilgrove, 26.9, flying, seen from car (S. Church). SUSSEX E. Shoreham, 31.8, in bird trapper's net (J. Newnham per CRP). CARMARTHEN. Burry Port Power Station, 17.9, seen flying in from the sea (Jones, *Ent. Rec.*, 96:81). CO. WICKLOW. August, caught by a boy and identified dead by Mrs. Jack of Belfast (IR per RFH).

*LASIOCAMPA QUERCUS L. HERTS. Much Hadham, 14.7, apparently of a Continental form (DEW).

CYCLOPHORA PUPPILLARIA Hb. (3) DORSET, Swanage, 30.9 (B. Skinner). ESSEX S. Bradwell-on-Sea, 5.10, female (AJD). HANTS S. Highcliffe, 25.9 (EHW).

*SCOPULA RUBIGINATA Hufn. ESSEX S. Bradwell-on-Sea, 14.8, male (AJD). Possibly immigrant; otherwise stray from haunts in Suffolk.

*IDAEA VULPINARIA ATROSIGNARIA Lempke. KENT E. Dungeness, 22.7 (B. Skinner). Date and place suggest immigration; otherwise extension of further recent spread.

*IDAEA OCHRATA Scop. HERTS. Rothamsted, 19/20.7 (Riley, *Ent. Rec.*, 96: 102).

RHODOMETRA SACRARIA L. (c. 1050) BEDS. Luton Hoo, 27.9, three (VA). Luton, 27.9, f. *sanguinaria* (KFW). Cockayne Hatley, 26.9. Woburn Sands, 1.10 (per A. Riley & IW). BERKS. Littleworth, August, eight (MHVC per GP). Uffington, 30.8, many later (Classey, *Ent. Gaz.* 35: 110). Buckland Warren, 1.9 (JLC per GP). Wytham Wood, 1.9 and numbers later (PW). Didcot, 26.9, six (per MA); 29.9 (R. Lewington per BRB). BUCKS. Near High Wycombe, in stubble, 28.8, many (Classey, *Ent. Gaz.* 35: 77). Marlow, August/September; Hazlemere, 9.9; Dorney Reach, n.d. (per MA). CAMBS. Cambridge, 26.9, two (RCR). CORNWALL W. Porthleven, 18/31.8, three (NG). Lizard, 20/28.8, eighteen, 24.9, five, 8.10, two (DCGB), 5.9 (B. Skinner). Coverack, 23.9 (ECP-C), 25.9, in a.m., 27.9, many; Goonhilly Downs, 27.9, still more; Gunwalloe, 25.9 (JHCC); Mawnan Smith, 20.8, 25.9, two (APF). CORNWALL E. Shevioc, 10.8, 18.8, 27.8, 7.9, 26.9, two, 5.10, 6.10, five (SCM). Trebrownebridge, 4.9, two, 13.9, two 23/28.9, nineteen; Bodmin Moor, 22.8 (AS); Davidstow Airport, 27.9, by day (SCM). CORNWALL W. Rosewarne, 13.6, 24/31.8, eight, 24.9, 26.9 (per A. Riley & IW). DEVON S. Axmouth, 27.7 (AME), 9.9, 16.9, 25.9, five, 26.9, a few by day, twelve in trap, 27.9, two by day, twenty in trap, 28.9, Shaldon, 26.9, a few by day (ECP-C). Yarners Wood, 16.8, 19.8, 20.8, 24.8, 31.8, 16.9, 23/30.9, twenty-eight, 1/6.10, six, 10.11, two (A. Riley & IW). DORSET. Portland B. O., 26.7, 22.8, 23/28.9, two by day, twenty-nine in trap (per NMH), on cliff, 24.9 (GAC), 24.9 (RKAM), 28.9/10, none to be seen (ECP-C). Preston, 14.8, 23/30.9, eight, 3.10; Lodmoor, 26.9, by day in long grass (M. Cade). Arne, 15.8, 22.9 (BP). Swanage, 24.9 (B. Skinner). Brownsea Island, 6.4, 11.4 (ATB). Furzebrook, 17.6, 10.8, 19.8, 27.9, five, 28.9, three (NRW). Studland, 23.9 (DCGB). ESSEX S. Bradwell-on-Sea, 24.8, two, 26.8, two, 2.9, 7.9, 14.9, 23/30.9, fifty-eight, 1/9.10, fifteen, 9.11 (AJD, SFD). Little Baddow, 27.9, two, 6.10 (GAP), Grays, 29.9, 1.10, 2.10 (DJLA). GLOS S. Weston Birt, 31.8, 7.9, two, 25.9, 27.9 (per A. Riley & IW). HANTS ISLE OF WIGHT. Freshwater, 27.9, four (SAK-J). HANTS S. Hayling Is., 18.7, 31.8, 26/29.9, seven (JMW). New Forest, 23.7 (HEC). Winchester, 25.7, 24.9, 29.9, 1.10

(DHS). Brockenhurst, 23.7 (M. Halsey). Highcliffe, 25.7, 15.8, 22.8, 23/26.9, thirty-eight, singles to 30.9 (EHW). Boldre, 26.9, nine, 27.9, nine, 27.9, seven (ADAR). St. Leonard's, 30.9, two, 3.10 (GHY). HANTS N. Alice Holt, 24/26.9, six (per A. Riley & IW). Burghclere, 17.7, 24.7, 20.8, 31.8, two, 4.9, 24/30.9, twenty-seven, 2.10 (CG-EF). Weyhill, 24.7, 26.7, two, 28.8, 31.8, 25/30.9, thirty-nine (MJ). Oakley, 5.8, f. *sanguinaria* (A. H. Dobson). HERTS. Potters Bar, 29.9 (RL-P). Broxbourne Woods, 28/29.9, five (DEW). HUNTS. St. Ives, 27.9 (JH). ISLE OF MAN. Castletown, 23.7; Derbyshaven, 25.7 (KGMB). Castletown, 7.8, 1.10 (per A. Riley & IW). KENT E. Whitstable, 7.9 (R per ESB). Sandwich Bay, 31.8; Westbere, 25/29.9, five (TWH). Newington, 23/28.9, twelve, 3.10, three (CL). Walmer, 25.9, 28.9 (Rouse, *Bull. Amat. ent. Soc.*, 43:16). Detling Hill, 25.9 (NFH). Boughton Aluph, 26.9, 30.9, two; Nackholt Wood, Brabourne, 6.10 (MAE). LANCS N. Blackburn, 27.9, three (J. Whiteside). LINCS N. Massingham, 8.9, two; Gibraltar Point, 29.9, four; South Thoresby, 29.9, 4.10 (REMP). NORTHANTS. Northampton, 27.9, 29.9, 2.10 (P. Sharp per P. J. Gent). NOTTS. Cropwell Butler, 10.9, 24.9 (NEM). OXON. Caversham, 25.9, 27.9 (BRB). Clanfield, 29.9 (B. Slocock). Hook Norton, September (D. Shepherd). SOMERSET S. Porlock, 3.9 (ECP-C). SOMERSET N. Berrow, 23.7 (BES). Weston-super-Mare, 25.9, October, a few (CHSB). STAFFS. Eccleshall, 31.7 (GM); Houndsworth Wood, 2.9 (RAN); Trent Vale, 8.9 (DWE); Keele, 9.9, Scott Hay (GB) (all per RGSW). SUFFOLK E. Wickham Skeith, 20.8, 27.9 (APF). Walberswick, 28/30.9, four, 6.10, 15.10, 26.10 (HEC). SUFFOLK W. Monks Eleigh, 2.8, 26.9, 28.9 (AW per HEC). SURREY. Rushmoor, 29.7, 26/30.9, twenty-four, 1.10 (PAD). Wimbledon, 26.9, 27.9, 1.10, two (Sir John Dacie). Thorpe, April, August, five (P. J. Baker). South Croydon, 1.8, 9.9, 24/29.9, seven (GAC). Wisley, 21.8, 27.8, 25/30.9, nine (AJH). Bramley, 21.8, 13.9, 17.9, 23/30.9, fourteen, 3.10, 6.10, 9.10 (RFB). Leigh, 13.9, 23/29.9, seventeen, 4.10 (RF). Buckland, 22.9, 25/30.9, eleven, 4.10 (C. Hart). Addington, 23/30.9, c. twelve (B. Skinner). Milford, 29/30.9, c. six (DWB). Dorking, 23/30.9, seven (DAT). Mitcham, 26/29.9, seven (RKAM). SUSSEX W. Walberton, 21.7, 23/30.8, six, 9.9, 12.9, three, 24/30.9, forty, 1/10.10, fifteen (RTR per CRP). Rogate, 23/31.7, four, 3.8, 4.8, 9.8, three 13.8, 18.8, 26.8, 31.8, 4/9.9, eight, 13.9, 18.9, 21/30.9, fifteen, 1/7.10, six, 11.10, 14.10 (JACG); West Chiltington, 29.7, 20.8 (JTR per CRP). Slindon, 30.7; Coates, 21.8; Church Norton, 22.8 (JTR per CRP). Fittleworth, 6.9 (SP). Bolney, 25.9 (DD). Pagham, 26.9, six, 28.9 (JTR per CRP). Shoreham, 27.9, by day (R.C. Dyson). Hassocks, 14.10, two (DD). SUSSEX E. Newhaven, 18.7, by day (DA per CRP). Peacehaven, 22.7, 29.7, 1.8, 22.8, 26.9, 29.9 (CRP). Ninfield, 5.8, 8.8, 21.8, 22.8, two, 26/30.9, ten, 1.10 (MP per CRP). Lewes, 17.9, by day (H. Leverton per CRP). Heighton, 23.9,

26.9, 30.9 (S. Curson per CRP). Ringmer, 24.9 (A. Batten per CRP). Brighton, 25.9 (KR per CRP). Abbot's Wood, 29.9, two (CRP). WARWICKS. Rugby, 16.6 (DIP). Luddington, 29.8, 30.8, two, 28.9 (per A. Riley & IW). Charlecote, 5.9, 14.9, 26/30.9, seventy-five, 2/9.10, five, 19.10 (AFJG); 25/30.9, seven (DCGB). Erdington, 1.10 (NMH). Coventry, 3.10 (M. Halsey). Hampton Wood, 6.10 (AFJG). WORCS. Compton, 28.9 (per Rothamsted). Evesham, 3.10 (per A. Riley & IW). YORKS (v.c.61). Spurn, 26.9 28.9 (B. R. Spence). Rudston, 26.9 (ASE per PQW). Muston, 28.9, two flushed from stubble (PQW). Yorks (v.c.62). Scarborough district, 29.9, two (per PQW). YORKS (v.c.64). Harrogate, 28.9 (per A. Riley & IW). WESTMORLAND/FURNESS. Ulverston, 6.8, 27.9 (ETH). Beatham, 23/28.9, four (J. Briggs). BRECKNOCK. Pontar-Dulas, 11.9, 19.9 (HGP). CARMARTHEN. Rhandirmwyn, 23/30.9, seven (per A. Riley & IW). GLAMORGAN. Rhoselli, 7.8, 20.8 (BJMcN). MONMOUTH. Llanfoist, 26.9 (NLB). PEMBROKE. Goodwick, 24/30.9, twenty-five, 3.10, 6.10, 9.10, two (WLR). ARGYLL (v.c.98). Barcaldine, 27.9, two (JCAC). DUNBARTON. Gartlea, 24.9, two, 26.9 (ICC). ISLE OF ARRAN. West Arran, 24.7, two by day (RPK-J). ISLE OF MULL, N.d. (A. Barr per RIL). RENFREW. Glasgow, 24/27.9, 27/28.9, 1.10, all in trap (RPK-J). Co. CORK. Fountainstown, n.d, thirteen (AAM). Co. Dublin, 29.9 (KGMB). Co. KERRY. Killarney, 9.10 (RFH). GUERNSEY. Lethen, mid July, three, mid September, twenty, 4.10 (TNDP).

ORTHONAMA OBSTIPATA Hb. (56). BUCKS. Marlow, 7.8 (per MA). CORNWALL W. Porthleven, 18/31.8, three (NG). Gunwallow, 22.9, 28.9 (JHC). Lizard, 25.8, 24.9, two (DCGB). CORNWALL E. Trebrowbridge, 12.10, male, 17.10, male, 11.11, female (AS). DEVON S. Axminster, 18.8, 27.9 (ECP-C). Yarnier Wood, 11.10, 9/11.11, five (per A. Riley & IW). DORSET. Swanage, 24.9 (JHC). ESSEX S. Bradwell-on-Sea, 6.11, two females, 12.11, 13.11, three females, one male (AJD, SFD). HANTS S. Highcliffe, 16.7, two, 19.7, 28.8, 7.9, 5.11 (EHW). Hayling Is., 24.7; Winchester, 31.8 (DHS). HANTS N. Weyhill, 28.9, female (MJ). KENT E. Newington, 21.8, female, 5.11, two females (CL). KENT W. Charlton, 4.6, female, 17.6, male (Allen, *Ent. Rec.*, 96:82). SUFFOLK E. Walberswick, 6.11 (HEC). SURREY. Mitcham, 21.7, worn male (RKAM). Leigh, 5.11 (RF). Bramley, 6.11, two males (RFB). SUSSEX W. Walberton, 10.6, 20.9, 2.10, 16.10, 1.11, 2.11, 8.11, two (JTR). Rogate, 1.10 (JACG). SUSSEX E. East Grinstead, early 6, two (KGWE). Peacehaven, 27.7, 31.8, 5.11, 7.11 (CRP). Ninfield, 8.11 (MP per B. Skinner). WARWICK. Luddington, 31.8 (per A. Riley & IW). Charlecote, 7.9 (AJG). PEMBROKE. Goodwick, 24.9, female (WLR). GUERNSEY. 29.9, only record (TNDP).

AGRIUS CONVULVULI L. (c.450 in G. B., ova & 5 larvae; Ireland c.20; Guernsey c.60). BERKS. Faringdon, at Nicotiana,

6.9 (Nash, *Bull. Amat. ent. Soc.*, 43:48). BUCKS. Bledlow, 28.8 (per MA). CORNWALL SCILLY. St. Mary's, c.11.10, four, c.20.10, two (PA per RIL). CORNWALL W. Lizard, 17/30.8, sixty-eight (DCGB); 25.8, a halved gynandromorph (AFJG); 7.9 (B. Skinner); n.d. two ova on *C. arvense* (BE per B. Skinner). Porthleven, 18.7/31.8, eleven (NG). Gunwalloe, 28.7, 25.9 (JHC). Coverack, 21.9, 23.9 (ECP-C); 25.9 worn (JHC). Blackwater, 22.8 (WGT). Sennen, 27.9 (VT per SCM). CORNWALL E. Millbrook, 13.8, 4.10; Sheviock, 31.8, 3.9, 12.9, at least ten at Nicotiana, fewer regularly until 30.9, two (SCM). DEVON S. Chillington, 17.8/2.9, thirty, 6/17.9, eight, of which 15 in trap, 23 at Nicotiana (HO'H). Axminster, 17.9, 3.10 (ECP-C). Budleigh Salterton, 23.8/10.10, c.75 with 50 in trap and 25 at Nicotiana (HW). Otterton, pupae, 3.9, 15.9, two (R. Crowther pre HW). DORSET. Studland, 17.8, three, 23.9 (DCGB). Portland B. O., 26.7, 20/31.8, ten, 12.9, 24.9, 26.9, three, 28.9 (NMH); 1.10 (ECP-C). Preston, 8/10.9, six, 20/30.9, fifteen, 2.10 (M. Cade). Uploders, 27.9/7.10, c.ten (NGW). Swanage, 30.9 (B. Skinner), 1.10 (KFW). ESSEX S. Bradwell-on-Sea, 19.8, 22.8, 24.8, 1/15.9, six, 27.9 29.9 (AJD, SFD). HANTS ISLE OF WIGHT. Freshwater, 27.7, 27.9, two, 14.10 (SAK-J). Bouldnor, 29.8 (DEW). HANTS S. Highcliffe, 5.9 (SCP); 23.8, two, 4.9, two, 5.9, 14.9, 25.9, four, 27.9, two (EHW). Beaulieu, 23.9 (J. Forbes per ME). Brockenhurst, 6.9, 24.9 (LWB). Hayling Is., 28.9, 30.9, 2.10, 3.10, 5.10 (JMW). HANTS N. Weyhill, male (MJ). HEREFORD. Garway, 1.9 (Strange, *Bull. Amat. ent. Soc.*, 43:29). HERTS. Harpenden, 23.8 (per A. Riley & IW). KENT E. Sandwich Bay, 31.7, two (TWH); 23.9 (A. Palmer). Westbere, 16.9, 23.9, two (TWH). Westgate-on-Sea, 24.9; Beltinge, 24.9; Canterbury, 22.9; Boughton Aluph, 17.9, 26.9, 30.9 (MAE). Folkestone, 23.9; Hythe, 24.9, 15.10; Walmer, 21.9 (Rouse, *Bull. Amat. ent. Soc.*, 43: 16,48). Chilham, October, one larva (MAE). Woodnesbrough, 23.8, one larva; Ramsgate, one larva (TWH). LINCS N. Gilbraltar Point, 29.8 (REMP). South Thoresby, 31.8, 4.9, 6.9, 7.9, 8.9, 14.9, 26.9, 2.10 (all singles marked before release, but no recaptures) REMP). OXON. Alvescot, 23.8; Clanfield, 26.9; Oxford, 6.9, at Nicotiana; Wootton Down, Woodstock, 5.10 (per GP). SUFFOLK E. Norton, 11.9, three, 27.9; Kelsale, 26.9 (RFE per HEC). SUFFOLK W. Ixworth, 12.9 (RFE per HEC). Walberswick, 27.9, 28.9, 4.10; Wolverston, 30.9 (HEC). SURREY. Bramley, 7.9, very dark female (RFB). Rushmoor, 23.9, 26.9, two, 1.10 (PAD). Leigh, 15.9, 24.9, 3.10 (RF). Tolworth, 27.9 (JP). Putney, 1.10 (DLFS). SUSSEX W. Walberton, 19.8, 23.8, two, 24.8, 27.8, 12/28.9, fifteen, 3/6.10, four, 17.10 (JTR). Worthing, 24.9 (D. Sheldon). Midhurst, 25.9 (per DJLA). Pagham, 28.9 (JTR). Selsey, 4.10 (P.Cooper per DC). Rogate, 6.9, on conifer trunk (JACG). SUSSEX E. Eastbourne, 5.8, 13.9, 20.9, 6.10; Peacehaven, 7.9, 12.9, 21.9, 2.10; Hastings, 10.9, 10.10; Uckfield, 10.9; Wesmeston, 11.9; Beachy Head, 11.9; Newhaven,

14.9, 18.9; Woodingdean, 14.9, eight at rest near street lamp, 5.10, two; Heighton, 13.9, 14.9, 24.9, 27.9; Barcombe, 23.9, 25.9; Plumpton, 26.9; Telescombe, 27.9; Polegate, 28.9; Ninfield, 28.9, two, 2.10, 3.10; Haywards Heath, 4.10 (CRP). Nutley, 29.9 (R. Colack per CRP). WARWICK. Charlecot, 3.9 (DCGB); 4.10 (AFJG). WESTMORLAND/FURNESS (v.c.69). South Walney, 17.6 (TD per DWK). Ulverston, 17.8, 1.9 (EFH). Beetham, 5.10, 6.10 (J. Briggs). WILTS N. Crockerton, 6.10 (HGP). WORCS. Simton Green, 2.10; Stourport, n.d. (per JG). YORKS (v.c.61). Muston, 19.8, 5.10, 20.10; Filey, 13.9; Atwick, 14.9; Driffild, 13.9, last instar larva (per PQW). YORKS (v.c.62). Newby, Scarborough, 6.9; East Ayton, 13.9 (per PQW). YORKS (v.c.64). Grassington, 19.10 (per Miss HL). CAERNS. Bangor, 7.10, moribund by the pier (per Mrs. J. M. Morgan). GLAMORGAN, Mumbles, 20.9 (SJG). MERIONETH. Talsarnau, 16.9 (per Mrs. J. M. Morgan). PEMBS. 8 & 9.10, two (J. Tillotson). ORKNEY. Papa Westray, 28.8 (per RIL). SHETLAND. Gutcher, N. Yell, 15.8; Scallaway, end August, in a school; Westerlock, 2.9; Burravoe, S. Yell, 6.9; Sandwick, south Mainland, 4.9, found dead; Sullum Voe, north Mainland, early September, Burra, mid September, found dead; North Roe, Mainland, 21.9 (N.C.C. warden per M. Hadley). Co. CORK. Fountainstown, n.d., twelve (AAM). Co. CLARE. Doomore, 18.9, fresh (NMH). Co. DUBLIN. St. Morgan, 13.9, in a garden (per KGMB). Co. GALWAY. Kylemore Common, 28.8 (Chatelain, *Ent. Rec.*, **95**: 243). Co. KERRY. Killarney, 24.9 (RFH). Tralee, 24.9 on a clothes line (J. Lavery per RFH). AT SEA. RRS "Challenger", 29.9, collected on deck flying round mast at dawn 51° 32'N, 12° 34' W; 26.9, two, flying round the ship at 9 a.m. 49° 46'N, 14° 02' W (Institute of Oceanographic Sciences). GUERNSEY. 20.8/4.10, over 60, maximum 22.9, twelve (TNDP).

*HYLOICUS PINASTRI L. KENT E. Dungeness, 4.6, fresh male at m.v. light (RKAM).

ACHERONTIA ATROPOS L. (23 moths, c. 15 larvae, 6 pupae). CAMBS. S. Cambridgeshire, July, two larvae on potato (per DC). CORNWALL W. Goonhilly Downs, 14.6 (Smith, *Ent. Rec.*, **95**: 222). Kynance Cove, 30.8 (R. Cook). Coverack, 21.9 (ECP-C). DEVON S. Metcombe, n.d., one dead larva and five pupae in a potato field, moth emerged 9.9 (per GG). DORSET. Swanage, 30.9 (B. Skinner). Wareham, late September, pupa; Portland, 27.8 (Dorset Environmental Centre). HANTS ISLE OF WIGHT. Bembridge, 11.10 (SAKJ). HANTS S. Romsey, flew into a window ("Southern Echo", 12.10, per RAB). Winchester, n.d., ten larvae (per RAB). KENT E. Crundale, early 9, two (WBL). Westbere, 22.9 (TWH). Dover, June, found dying on a dustbin, reported in local paper (Rouse, *Bull. Amat. ent. Soc.*, **43**: 16). MIDDLEX. Islington, 15.8 (S. Grant per DC).

OXON. Cowley, 30.9; Kingston Blount, 30.9, two larvae (IL per GP). SHROPSHIRE. Aston-on-Clun, October, taken from a bee-hive (Norton, *Ent. Rec.*, **96**:36). Acton, 15.10 (per Mrs. MJM). Wrexham, 1.11 (per Mrs. MJM). SUSSEX W. Portslade (Mrs. C. per CRP). WARWICK. Kingsbury Water Park, 12.10 (Thomas, *Ent. Rec.*, **96**:75). YORKS (v.c.61). Between Kilnsea and Easington, 7.9, on shore (B. R. Spence). YORKS (v.c.62). Guisbrough, September, in garden (NH per PQW). Thirsk, 13.10 (per PQW). ORKNEY. Stronsay, 28.9, on s.s. "Orcadian", after night birth at Kirkwall (SVG per RIL). RENFREW. Glasgow north, 27.9 (RPK-J). Co. CAVAN. Ballyhealen, 2.8, on coat in a garage (JPO'C). Co. CORK. Fountainstown, n.d., two (AAM). Co. DUBLIN. Ringstead, 28.9, female (KGMB). GUERNSEY. Lethene, 31.8 (TNDP).

DAPHNIS NERII L. GUERNSEY. Lethene, 26.9, first record since 1923 (TNDP).

HYLES GALLII Rott. (2 moths, 1 larva). HANTS N. Sparsholt, 16.7 (RAB per B. Skinner). WILTS. S. Bentley Woods, 14.7 (PW per R. Pitman). PERTSHIRE S. Almondbank, Perth, 21.9, one nearly fullgrown larva (Taylor, *Ent. Rec.*, **96**:36).

THAUMETOPOEA PROCESSIONEA L. CORNWALL W. Mawnan Smith, 19.8, very worn male with *M. loreyi* and other immigrants (Foster, *Ent. Rec.*, **95**:216). Probably the first genuine British record.

*EUPROCTIS CHRYSORRHOEA L. SURREY. Wisley, 17.7, male (AJH). WILTS S. Bentley Woods, 14.7 (PW). YORKS (v.c.61). Spurn, 18.7, 19.7, 20.7, 23.7, two, 25.7 (B. R. Spence). Dates coincide with those of other unusual immigrants, but sudden internal spread in south and south east winds seems a more probable cause: of these and other unusual records compare 1982.

LYMANTRIA DISPAR L. CORNWALL W. Mawnan Smith, 19.8, male with *T. processionea*, etc. (Foster, *Ent. Rec.*, **95**:216).

*LYMANTRIA MONACHA L. Sussex E. Rye, 13.8, rather worn, after *Eurois occulta* on 12.8 (MWFT). Possibly immigrant, though certainly a common resident in the Weald of west Kent and east Sussex.

*PELOSIA MUSCERDA Hufn. (5) ESSEX S. Bradwell-on-Sea, 24.7 (AJD). KENT E. Orlestone Forest, 16.7 (GAC). KENT W. Bromley, 20.7, male (Clarke, *Ent. Rec.*, **96**:55). SUSSEX E. Playden, 18.7, rather worn (MWFT). SUSSEX W. Pulborough, 22.7 (JTR). The dates and scattered distribution are suggestive of immigration, probably from the Ardennes. The only known colonies in Britain are in the Norfolk Broads.

*EILEMA PYGMAEOLA Z. (2) SUFFOLK E. Near Thorpeness, 18.7, two well inland (B. Skinner). Possibly immigrant, otherwise wanderers from coastal habitats in Norfolk and East Kent.

**LITHOSIA QUADRA* L. HANTS S. Highcliffe, 17.7, 19.7, males (EHW). Possible immigrants, as in 1982. Also reported from Cornwall: Sheviok, 6.10 and Trebrowbridge, 25.7, where it is probably resident, and also from co. Sligo, 23.7.

**MEGANOLA ALBULA* D. & S. DEVON S. Yarnar Wood, 22.7 (per A. Riley & IW). ESSEX S. Bradwell-on-Sea, 14.7, 18.7, 20.7, 24.7 (AJD, SFD).

**NOLA AERUGULA* Hb. ESSEX S. Bradwell-on-Sea, 23.7 (AJD). SUFFOLK E. Near Thorpeness, 18.7 (B. Skinner).

**EUPLAGIA QUADRIPUNCTARIA* Poda. DORSET. Portland B.O., 19.8, 20.8, seen in garden, 25.8, in trap (NMH). Possibly immigrant, otherwise straying from S. Devon.

OCHROPLEURA FENNICA Tausch. WARWICKS. Rugby, 14.8, male (DIP).

OCHROPLEURA LEUCOGASTER Freyer. SUSSEX W. Walberton, 17.10 (JTR, BENHS Exhibition). First British record.

EUROIS OCCULTA L. (8) BERKS. Sunninghill, 27.8 (per MA). HANTS S. Brockenhurst, 9.8 (ADAR, BENHS Exhibition). Lincs N. South Thoresby, 29.8 (REMP). SURREY. Buckland, 8.8, pale form (C. Hart). South Croydon, 31.8 (GAC). SUSSEX E. Playden, 12.8 (MWFT). YORKS (v.c.61). Rudston, 28.8 (ASE per PQW). DENBIGH. Gresford, 8.8 (per Mrs. JMM).

MYTHIMNA ALBIPUNCTA D. & S. (6) DORSET. Portland, 24.9 (GAC); 2.10, worn male (RKAM). ESSEX S. Bradwell-on-Sea, 24.8 (SFD). HANTS ISLE OF WIGHT. Bouldner, 29.8 (DEW). KENT E. Boughton Aluph, 14.10 (MAE). SUSSEX E. Peacehaven, 17.10, fertile female (CRP).

MYTHIMNA VITELLINA Hb. (c.300) BUCKS. Willen, 25.8 (per MA). CORNWALL W. Kennack Sands, 19/20, male (Foster, *Ent. Rec.*, 95:216). Porthleven, 18/31.8, twenty-one (NG). Mawnan Smith, 16/18.9, three dark males (APF). Cornwall, 18/31.8, c.150 (J. Dyson per RCD). Lizard, 19/28.8, nightly maxima 24.8, fourteen, 27.8, fifteen (DCGB). Coverack, 23.9, three, 24.9 (ECP-C). Gunwalloe, 25.9, 28.9, swarming at sugar (JHC). CORNWALL E. Trebrowbridge, 24.9, dark (AS). DEVON N. Roborough, 15.9 (PHS). DORSET. Portland B.O., 1.9, two, 5.9, five, 6.9, two, 27.9 (NMH). Preston, 23.8, male (M. Cade). Swanage, 23.9 (PAD). Brownsea Island, 18.9 (ATB). Furzebrook, 22.9, 29.9, two (NRW). HANTS S. Highcliffe, 15.8 (Wild, *Ent. Rec.*, 95:231). HANTS N. Burghclere, 16.9 (CGE-F). KENT E. Dungeness, 3.9, two (MJ). SUSSEX W. Worthing, 13.9 (PDW). Walberton, 11.10 (JTR per CRP). WARWICKS. Charlecote, 8.9 (DCGB). PEMBROKE. Manorbier, 13.6, pale male (Mrs. DRR). Goodwick, 24.9, 27.9, two, 28.9, three (WLR). Co. CORK. Fountainstown, n.d., one only (AAM). GUERNSEY. Twenty-five noted; occurs annually, probably resident (TNDP).

MYTHIMNA UNIPUNCTA Haw. (22). CORNWALL W. Gunwalloe, 25.9 (JHC). Coverack, 21.9 (ECP-C). Lizard, 24.10 (DCGB). Rosewarne, 2.10 (per A. Riley & IW). CORNWALL E. Sheviock, 6.10 (SCM). DORSET. Portland, 2.10, B.O., 5.10, 12.10, 4.11, 16.11 (NMH). ESSEX S. Bradwell-on-Sea, 12.11 (AJD). NOTTS. Cropwell Butler, 1.10 (NEM). PEMBROKE. Manorbier, 22.9 (Mrs. DRR). Goodwick, 24.9, 27.9, 7.10, 9.10 (WLR). GUERNSEY. 25/30.9, four (TNDP).

MYTHIMNA LOREYI Dup. (42) CORNWALL W. Portleven, 18/31.8, six (NG). Mawnan Smith, 19.8 (APF). Lizard, 24.8, two, 25.8, two, 26.8, 27.8 (DCGB, AFJG); 27.8, five (BE, B. Statham); 30.8 (R.Cook); 2.9, 6.9, 7.9 (B. Skinner, RGC). CORNWALL E. Trebrowbridge, 25.8, 1.9; Bodmin Moor, 31.8 (AS). DEVON S. Axminster, 17.8 (ECP-C). DORSET. Preston, 25.8 (M. Cade). Portland B.O., 1.8, 20.8, two, 30.8, 6.9 (B. Skinner, NMH). HANTS S. Hayling Is., 15.8 (JMW). SURREY. Leigh, 29.8 (R. F. per B. Skinner). DERBYS. Glapwell, 10.9, female (JC). GUERNSEY. 28.8, 30.8, 1.9 (TNDP, RMA), first Guernsey records.

CRYPHIA RAPTRICULA D. & S. KENT E. Dungeness, 20.6 (Sterling, *Ent. Rec.*, 95:231).

*ENARGIA PALEACEA Esp. (3) BERKS. Faringdon, 18.7, 7.8 (MHVC). SUSSEX W. Ambersham, 26.7 (JTR per CRP).

SPODOPTERA EXIGUA Hb. (38) CORNWALL W. Coverack, 10.8, three (DCGB). Lizard, 22.8, 26.8 (DCGB); 27.8 (BE, BENHS Exhibition). DORSET. Portland B.O., 11.7, 8.8 (NMH). Preston, 8.11, male 9.11, female (M. Cade). ESSEX S. Bradwell-on-Sea, 26.7, 28.7, 3.10 (AJD, SFD). HANTS ISLE OF WIGHT. Freshwater, 23.9 (SAK-J). HANTS S. Hayling Is., 6.6, 29.7, 6.8 (JMW). Lyndhurst, Parkhill Enclosure, 5.8 (JWP). Highcliffe, 2.8 (EHW). HANTS N. Weyhill, 24.7, male, 25.7, female (MJ). KENT E. Sandwich, 30.8 (B. Skinner). Detling, 27.9 (NFH). Westbere, 29.9 (TWH). SUSSEX W. Rogate, 5.8, 13.8 (JACG). SUSSEX E. Ninfield, 7.6, 16.6 (MP per CRP). Ringmer, 30.7 (A. Batten per CRP). WARWICKS. Charlecote, 14.6, 17.8, 24.8 (AFJG). YORKS (v.c.61). Rudston, 6.7 (ASE per PQW). GUERNSEY. July 2nd week, five, 26.9 (TNDP).

HELIOTHIS ARMIGERA Hb. (22) CORNWALL W. Lizard, 24.9, two (DCGB). Coverack, 25.9; Gunwalloe, 25.9, 28.9, three (JHC). Rosewarne, 2.10 (per A. Riley & IW). DORSET. Poole, 23.9 (SCP, BENHS Exhibition). Swanage, 30.9 (B. Skinner). ESSEX S. Bradwell-on-Sea, 28.9, 17.10 (AJD, SFD). HANTS ISLE OF WIGHT. Freshwater, 25.9 (SAK-J). HANTS S. Highcliffe, 25.9 (EHW). HANTS N. Weyhill, 28.9, female (MJ). KENT E. Detling, 27.9 (NFH, BENHS Exhibition). SUSSEX W. Walberton, 26.9 (JTR per CRP). PEMBROKE. Goodwick, 28.9, two, 29.9 (WLR). GUERNSEY. Lethene, 28.9, 1.10 (TNDP).

HELIOTHIS PELTIGERA D. & S. (7 moths, larvae) BUCKS. Willen, 25.8 (per MA). CORNWALL E. Shevioc, 26.1, into house in very warm spell (Madge, *Ent. Rec.*, **96**:37). DORSET. Portland B. O., 17.6 (NMH). HANTS S. Hayling Is., 27/28.8, larvae common on *Senecio viscosa* (JWP). KENT E. Detling, 10.6 (NFH). Dungeness, 24.8, a few larvae after long search (C. Hart). SUSSEX W. Pagham Harbour, 25.8, two larvae (JWP). SUSSEX E. Brighton, 1.7 (KR per CRP).

EUBLEMA OSTRINA Hb. (3) DORSET. Portland, 25.6 (JMW); f. *carthami* female, no eggs obtained (Pickles, *Ent. Rec.*, **95**:224); 18.6 (WLC per B. Skinner).

TRICHOPLUSIA NI Hb. (7) DORSET. Poole, 15.9 (SCP). PEMBROKE. Goodwick, 12.8, 1.9, 22.9, 24.9, two, 28.9 (WLR).

DIACHRYSLA ORICHALCEA F. (10) HANTS S. Highcliffe, 21.8 (EHW, BENHS Exhibition). Boldre, 29.7 (ADR, BENHS Exhibition). SUSSEX W. Walberton, 3.8, two, 5.8, 10.8, 11.8, 11.10, 11.11 (JTR per B. Skinner, CRP). WARWICKS. Stratford-on-Avon, 30.7, fertile female given by R. Bliss (DCGB).

MACDUNNOUGHIA CONFUSA Steph. (2) KENT E. Dover, 29.7, in garden trap (GHY). WARWICKS. Stockton, 31.8 (DW per B. Skinner).

*AUTOGRAPHIA BRACTEA D. & S. (1) KENT E. Kingsdown, 26.7 (TWH). [YORKS (v.c.61). Troutsdale, 1.7; Rudston, 18.7; Grimston, 28.7; Muston, 4.8, 6.8 (per PQW). Dates and distribution suggest that these were results of spread from areas of residence elsewhere in Yorkshire, rather than of immigration.]

CATOCALA FRAXINI L. (3) Cambs. Wicken Fen, n.d. (TB per HEC). SURREY. Croydon, 23.9 (Lees, *Ent. Rec.*, **96**:16). GUERNSEY. Lethene, 7.9, last record 1889 (TNDP).

DYSGONIA ALGIRA L. DORSET. Near Swanage, 23.9 at m.v. light (Davey, *Proc. Trans. Br. ent. nat. Hist. Soc.*, **17**:6, plt. 3, fig.).

*HYPENA CRASSALIS F. (2) SUSSEX E. Rye Harbour, 16.7 (R. Knight per MFWT). GUERNSEY. Lethene, 20.7, in absence of bilberry in Guernsey probably wind-blown; new to island (TNDP).

HYPENA OBSITALIS Treit. SUSSEX E. Rye, 6.3, disturbed in a garage where it had probably hibernated (Tweedie, *Ent. Rec.*, **95**:126).

(To be continued)

DIFFERENCES BETWEEN THE FEMALES OF
AMPHIPYRA PYRAMIDEA L. AND *A. BERBERA*
RUNGS: A CORRECTION TO M.B.G.B.I.
VOLUME 10

By Dr J. C. A. CRAIK*

It is inevitable that, in an undertaking as ambitious as the *Moths and Butterflies of Great Britain and Ireland* (MBGBI) some errors will occur, but it is unfortunate that one error perpetuated in this standard work will possibly continue to misguide and frustrate generations of lepidopterists in the future.

In MBGBI (Vol. 10), descriptions of the female genitalia of *Amphipyra pyramidea* and *A. berbera* on page 149 and the drawings on p. 157 are taken from the figure given by Heath (1971). Thus both Heath and MBGBI convey the impression that the only specific difference is the shape of the genital plate (ventral sternite of eighth abdominal segment). These drawings were taken from the original descriptions given by Fletcher (1968) who does indeed give each of these shapes in his drawings. However, (as is always a risk with unlabelled drawings of genitalia) Fletcher did not intend this to be a specific difference and did not mention it in his text. Fletcher described and illustrated specific differences in the shape of the lamella postvaginalis, a small structure easily overlooked both in specimens and in Fletcher's drawings. The term lamella postvaginalis was evidently misinterpreted by others as meaning genital plate, and the fortuitous difference in Fletcher's drawings of the genital plate became a spurious specific difference in the drawings of Heath (1971) and in MBGBI Vol. 10.

I have examined the genitalia of several hundred specimens of each species and can state with confidence that both the shapes given by Heath occur within each species – not surprisingly, since no original author has ever intended or described them as a valid difference between the species. Thus entomologists who attempt to use the criterion for female genitalia given by Heath or by MBGBI will not only make incorrect identifications but will also condemn themselves to hours (in my case, a year) of frustration and doubt, since most specimens have plates with shapes which are intermediate between the two forms illustrated.

Besides the difference in the lamella postvaginalis, Fletcher also illustrates and describes a difference in the relative lengths of the setae, firmly attached hair-like structures which cover the genital plate. The setae are long in *pyramidea*, short in *berbera* – see Craik (1980) for measurements. I have found this criterion to be much the most distinct difference between the genitalia of the females. The Marine Laboratory, P.O. Box 3, Oban, Argyll. PA34 4AD.

lamella postvaginalis is a small structure requiring careful examination, but the difference in the lengths of the setae is so pronounced and so readily observed through a low-power microscope that identification based on them is rapid and easy after very little experience. However, this very distinct and valuable criterion is unfortunately not mentioned in MBGBI.

This single error in the series "Guide to the Critical Species" by Heath and others should not be taken as a criticism of the series as a whole. I have found all seven parts of this series to be extremely valuable during the years since they appeared, and it is a great pity that the series was not continued and expanded.

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QUEDIUS AETOLICUS KRAATZ (COL., STAPHYLINIDAE) IN SURREY. — Professor J. A. Owen appears to have provided the first published record of this species in Surrey (1976, *Proc. Br. ent. nat. Hist. Soc.*, **9**: 34-35). I first encountered this beetle on 26.ii.83 when a dead but still intact example was found behind bark on Ham Common, some six miles to the north of the area (TQ16) which Prof. Owen hints at (*loc. cit.*). This specimen was kindly identified by Mr. P. M. Hammond at the British Museum (Natural History). Later on in the year (18.xi), I was fortunate enough to take a second, live example from the same dead oak tree where it was resting behind the loose and powdery bark. It is interesting that Joy (1932, *Practical Handbook of British Beetles*, **1**: 113) regards *aetolicus* as very rare with only two counties to its credit. Since then, of course, a number of other localities have been found and no doubt its present rarity should be interpreted as less extreme. — D. A. PRANCE, 23 Brunswick Road, Kingston Hill, Kingston-upon-Thames, Surrey.

CORRIGENDUM. — In my paper on *Gronops inaequalis* Boheman (*Ent. Rec.*, **95**:215), one should read in lines 12/14 down, "Scales more uniform in size than in *inaequalis*." — L. CLEMONS.

LEPIDOPTERA OF ABERDEENSHIRE AND KINCARDINESHIRE

By R. M. PALMER* and M. R. YOUNG**

4th Appendix

This appendix updates the Lepidoptera of Aberdeenshire by adding 16 spp. discovered since the publication of the last appendix (*Ent. Rec.* **93**, 116-119 (1981)). Three species recorded by Trail (1878), Reid (1892) and Cruttwell (1907) have been rediscovered and are included in part 1 of the list. As in previous appendices part 2 is a supplementary list which contains over 60 new Vice-county records for V.Cs 91-93.

Unless otherwise indicated the records are those of the authors and date from 1981-82. We thank once again E. C. Pelham-Clinton for much useful advice and for confirming the identification of many of the microlepidoptera in this list. We also thank the other lepidopterists whose names appear in the list for providing us with many useful records, especially S. Palmer for the many records from N. Aberdeenshire.

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(1) NEW OR RE-DISCOVERED SPECIES

- Eriocrania sparrmannella* Bosc. S. A. Muir of Dinnet N. N. R., one, 1982.
Ectoedomia argyropeza Zell. S. A. Muir of Dinnet N. N. R. and near Monymusk; mines and green islands on *Populus tremula*. N. A. Haddo House, mines on *P. tremula*.
Caloptilia rufipennella Hb. Bred from rolled leaves of *Acer pseudo-platanus*. K. Glenbervie. S. A. Bucksburn, Kirkhill forest. N. A. Haddo House.
Coleophora vitisella Gregs. Rare, Bennachie (Reid, 1892). S. A. Bred from cases on *Vaccinium vitis-idaea*, Muir of Dinnet N.N.R. and near Monymusk.
Schiffermuelleria subaquilella Stt. N. A. Longhaven cliffs.
Chrysoesthia sexguttella Thunb. K. St. Cyrus N. N. R. Abundant; also larval signs on *Atriplex hastata*. N. A. Cruden Bay (E.C.P.C.).
Bryotropha boreella Dougl. S. A. Drum Castle woods and near Monymusk.

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B. mundella Doug. S. A. Foveran.

Scrobipalpa atriplicella F.v.R. Braemar (Cruttwell, 1907). K. St. Cyrus N. N. R., bred from larvae on *Atriplex hastata*.

Bactra furfurana Haw. N. A. Loch of Strathbeg, one, 1981. (S. Palmer).

Blastesthia turionella L. Upper Deeside (Trail, 1878). N. A. Clashindarroch Forest (T. Winter).

Cydia gallicana Guen. N. A. Wartle moss.

Dichrorampha flavidorsana Knaggs K. St. Cyrus N.N.R., one, 1981.

Cataclysta lemnata L. S. A. City of Aberdeen, 1982, probably introduced in 1980 with *Lemna* sp.

Emmelina monodactyla L. N. A. Sands of Forvie N.N.R., one, 1982 (R. Davies).

Pelurga comitata L. N. A. Sands of Forvie, one, 1981. (R. Davies).

Antichloris eriphia F. S. A. Bridge of Dee, one, 1982. A West Indian species probably imported with bananas (M.R.Y. *in press*).

Xanthia gilvago D. & S. K. St. Cyrus N.N.R., one, 1981. (D. Carstairs).

Enargia paleacea Esp. S. A. Muir of Dinnet N.N.R., one, 1982.

(2) SUPPLEMENTARY LIST OF NEW VICE-COUNTY RECORDS

- (a) New to Kincardineshire (91): *Elachista atricomella* Stt.; *Epinotia immundana* F.v.R.; *Eurrhynx hortulata* L..
- (b) New to S. Aberdeenshire (92): *Adela rufimitrella* Scop.; *Tinea trinotella* Thunb.; *Calybites auroguttella* Steph.; *Phyllonorycter emberizaepennella* Bouche; *Ypsolopha ustella* C1.; *Coleophora idaeella* Hofm.; *C. virgaureae* Stt.; *C. taeniipennella* H.-S.; *Elachista subocellea* Steph.; *Esperia sulphurella* F.; *Teleiodes sequax* Haw.; *Epinotia cruciana* L.; *Cydia internana* Guen.; *Scoparia pyralella* D. & S.; *Amblyptilia punctidactyla* Haw.
- (c) New to N. Aberdeenshire (93): *Ectoedemia mediofasciella* Haw.; *Stigmella tityrella* Stt.; *Leucoptera laburnella* Stt.; *Caloptilia alchimiella* Scop.; *Phyllonorycter junoniella* Zell.; *P. scopariella* Zell.; *P. coryli* Nic.; *P. ulmifoliella* Hb.; *Argyresthia pygmaella* Hb.; *Phaulernis fulviguttella* Zell.; *Coleophora benanderi* Kan.; *C. glaucicolella* Wood; *Cosmiotes freyerella* Hb.; *Borkhausenia fuscescens* Haw.; *Depressaria pulcherimella* Stt.; *Teleiopsis diffinis* Haw.; *Caryocolum vicinella* Dougl.; *Clepsis consimilana* Hb.; *Cnephasia conspersana* Dougl.; *Epiblema farfarae* Flet.; *Udea ferrugalis* Hb.; *Platyptilia gonodactyla* D. & S.
- (d) Species now recorded from all three vice-counties: *Eriocrania semipurpurella* Steph.; *Stigmella aucupariae* Frey; *Incurvaria masculella* D. & S.; *Ochsenheimeria bisontella* L. & Z.; *Phyllonorycter sorbi* Frey; *P. spinolella* Dup.; *Paraswammerdamia lutarea* Haw.; *Agonopterix angelicella* Hb.; *Schreckensteiniella festaliella* Hb.; *Aethes cnicana* Westw.; *Cochylis atricapitana*

Steph.; *Pandemis heparana* D. & S.; *Cnephasia conspersana* Dougl.; *Acleris laterana* F.; *Epinotia pygmaeana* Hb.; *E. tedella* Cl.; *E. scutulana f. cirsiana* Zell.; *Eucosma campoliliana* D. & S.; *Alucita hexadactyla* L.; *Scoparia subfusca* Haw.; *Eudonia crataegella* Hb.; *E. angustea* Curt.; *Opsibotys fuscalis* D. & S.; *Udea olivalis* D. & S.; *Stenoptilia bipunctidactyla* Scop.; *S. pterodactyla* L.

- (e) New records of macrolepidoptera. The following species, for which very few previous Aberdeenshire and Kincardineshire records exist, have now been recorded from N. Aberdeenshire (93). In all cases, except the one noted, the records refer to Loch of Strathbeg area and were collected by S. Palmer.

Coenonympha tullia Mull. (Windyheads Hill, New Pitsligo, 1977; E.C.P.-C.); *Hydriomena impluviata* D. & S.; *Eupithecia pygmaeata* Hb.; *E. trisignaria* H.-S.; *E. indigata* Hb.; *Furcula furcula* Cl.; *Aporophyla lutulenta* D. & S.; *Eupsilia transversa* Hufn.; *Apamea unanimes* Hb.; *Amphipoea crinanensis* Burr.; *Celaena leucostigma* Hb.; *Rhizedra lutosus* Hb.; *Herminia nemoralis* Fab.

COLEOPHORA DEVIELLA ZELL. (SUAEDIVORA MEYRICK) REDISCOVERED. — In the autumn of 1981 Norman Heal found a few *Coleophora* cases on *Suaeda maritima* (L.) Dumort in Kent. He assumed that they were *deviella*, but by now, it has become apparent that they are a new species.

Following up this discovery, my son Alan and I visited the Essex saltings on the 9th October 1982, starting at Fingeringhoe where we found only *C. atriplicis* Meyr. However, moving farther south, he soon found that the wanted "*suaedivora*" cases were not uncommon. I exhibited some of these at the next BEHNS meeting, where both Col. A. M. Emmet and the editor of the *Record* were sure that they were not the species I had named them.

Alan and I had also found on the *Suaeda*, half a dozen fairly long straight cases which we did not recognize. From these I bred two moths on the 11th. and 19th. July 1983, which were a mystery until Raymond Uffen kindly determined them as *C. deviella* Zell. Accordingly, it was a matter of great satisfaction to have arrived at the right moth via another of N. F. Heal's discoveries.

Many more cases of *deviella* were found in October 1983 when we took Raymond Uffen to see them. They sit rather prominently on top of the plant, whereas the cases of the other species tend to hide among the seeds and leaves. — R. FAIRCLOUGH, Blencathra, Deanoak Lane, Leigh. Surrey.

JOHN ABBOT'S LONDON YEARS

PART II

By RONALD S. WILKINSON*

III. Abbot enters Drury's circle of friends

If Jacob Bonneau could not contribute to Abbot's technique of colouring his illustrations, at least he was able to provide another service of considerable importance to the young naturalist. Bonneau "praised" Abbot's watercolours, and through a friend, a teacher of grammar named Rice who was a former collector of insects, secured his pupil's introduction to the owner of the most select and extensive entomological cabinet in England (N). Abbot vividly recalled his excitement at meeting Drury "Dru" Drury,²⁹ "who then was allowed to have the best Collection of Insects both English & foreign of any one. I leave You to Judge my pleasure & astonishment at the sight of his Cabinets the first I had ever seen of the kind [,] he very politely offered to lend me Insects to draw, & we immediately became well acquainted[.] That hour may be said to have given a new turn to my future life [,] I had immediately a Mohogany Cabinet made of 26 Draws, covered with sliding tops of Glass, it cost me 6 Guineas, & begun to collect with an unceasing Industry[.] "Abbot "met with & soon after purchased a parcel of beautiful Insects from Surinam," and "soon began to have a respectable Collection but not Satisfied with it . . . craved more" (N). Under the influence of his new mentor, and with ample funds provided by his parents, Abbot set out to increase his knowledge of entomology.

When he and Abbot met, Drury was not yet the Queen's goldsmith and cutler to the King at the Strand address so familiar to later eighteenth-century naturalists. He was still a silversmith and maker of knife and fork handles at 1 Love Lane, Wood Street, but he had already expended much effort and a considerable sum of money over a period of twenty years to enlarge his collection. Following in the tradition of a seventeenth-century predecessor, the London apothecary-naturalist James Petiver,³⁰ Drury obtained exotic insects by corresponding with residents of foreign countries, and applying for assistance to persons travelling abroad. He used Petiver's technique of supplying apparatus and instructions to prospective collectors.³¹ Drury's efforts were sometimes fruitless, but his net was spread wide enough and his financial resources were sufficient to insure a steady flow of parcels of insects to his London residence. Although his cabinet was best known for its numerous and occasionally unique exotic specimens, Drury also sought out English rarities. Unlike some eighteenth-century collectors who restricted their

*The American Museum of Natural History, New York, New York 10024.

efforts to the more popular orders, such as the Coleoptera and Lepidoptera, Drury admitted all insects to his cabinet, and had a special interest in the Odonata (then included in the Neuroptera). He was not a 'closet naturalist' who depended entirely on others for his specimens. Drury's correspondence provides evidence that he was a very knowledgeable field collector, who was especially aware of the problems encountered in rearing. He could offer Abbot much good advice, as well as access to his cabinet and ample library.³²

Most of the events in Abbot's "Notes" are undated, and he did not record even the year of the occasion which gave a "new turn" to his life. Drury's name was not specifically mentioned in the annotations to Abbot's watercolours until October 1769, when he executed a composition of beetles and mole crickets "from the cabinet of Mr. Drury" (C71), yet evidence from previous drawings and the order of the "Notes" suggests that the meeting could have occurred as early as 1767. A watercolour of that year (H6) is the earliest of Abbot's surviving depictions of exotic insects. The "Notes" imply that Abbot had not seen a cabinet containing exotics before Drury's, and the Coleoptera in H6 were from Maryland and Jamaica, localities from which Drury had been well supplied. Abbot drew other American insects before C71, such as a spectacular geometrical group of swallowtail butterflies (C57, March 1769); no provenance is indicated, but the *Papilio glaucus glaucus* L., *Papilio troilus* L. and *Battus philenor* (L.) would have been taken on the North Atlantic seaboard, where Drury had collectors. Drawings dated between H6 and C71 (the latter including the earliest reference to Drury's name) mention the Duchess of Portland and George Edwards, and one would suppose from the "Notes" that these were later acquaintances. Abbot first used Linnaean trivial names when annotating his drawings for June 1767 (C12, "Pavonia of Linnaeus" and "Bucephala of D[itt]o"), possibly through Drury's advice or through the use of his new friend's library.³³ The 1767-1769 drawings surely reveal the effects of "unceasing Industry," Abbot's characterization of his efforts after seeing Drury's cabinet; from clearwings to caddis flies, he was collecting a wide variety of insects and arachnids, including many representatives of less popular orders. He was seeking out the larvae of a considerable number of moths and rearing them successfully (Bombycoidea, Geometroidea, Sphingoidea, Notodontoidea, Noctuoidea and micros). Some of his larvae had been parasitized, and perhaps inspired by Albin's plates which depicted these subjects, Abbot studied the ichneumons and drew their various stages. Not many localities were mentioned in Abbot's annotations of the period, but he visited Bishop's Wood, Highgate, a favourite spot of entomologists since the seventeenth century. He may have collected there in the company of his new mentor.

The frustrating brevity and selectivity of the "Notes" prompt speculation about which of Drury's many naturalist friends Abbot might have met during his residence in London. Drury was a member of the Aurelian Society, the second of that name, which was formed by the London insect-hunters "fourteen Years and upward" after the fiery dissolution in 1748 of the first Society, so vividly described by Moses Harris. Apparently the later Aurelians met at the King's Arms in Cornhill, after the tradition of their predecessors who also held forth at a tavern, the ill-fated Swan.³⁴ The secretary was Harris, entomologist and author of *The Aurelian*, which had appeared in parts between 1758 and 1766 to become one of the classic works on the British Lepidoptera. Harris executed most of the plates for Drury's own book on insects, *Illustrations of Natural History* (1770-1782).³⁵ Another of Drury's Aurelian Society friends was Emanuel Mendes da Costa, a polymath best known for his studies of fossils and shells, who would be committed in 1768 to the King's Bench Prison after embezzling an enormous sum from the Royal Society while serving as its clerk, librarian and keeper. During his incarceration, da Costa wrote the French translation which appeared in Drury's *Illustrations*.³⁶ The botanist Daniel C. Solander, a former pupil of Linnaeus and apparently an Aurelian member, was also a friend. Solander was then an assistant in the British Museum, engaged in cataloguing the natural history collections. He would soon depart with another naturalist well known to Drury, the young and wealthy Joseph Banks, on Cook's first voyage.³⁷ The horticulturist and nurseryman James Lee of Hammersmith, who was an ardent entomologist and Drury's associate in natural history enterprises over a long period, has been suggested as a probable Aurelian. Like Solander, Lee was an avid Linnaean who helped to promote the new system in England.³⁸

Elsa Allen concluded that Abbot was probably "associated" with the second Aurelian Society,³⁹ but this is very unlikely. Drury's correspondence reveals that the Society was dissolved early in 1767 due to internal dissent.⁴⁰ Although Abbot was successfully collecting insects at the time, he was only fifteen years of age; also, there is no evidence that he might have known Drury until later in the year. Drury's efforts to form a new Aurelian Society lasted well into 1768. He was assisted in the attempt by Solander and a more recent friend, another of Linnaeus' pupils then living in London, the Danish entomologist Johann C. Fabricius, who in later years described a number of Abbot's specimens in various cabinets.⁴¹ The plan was unsuccessful, and another entomological society was not established in London until 1780.⁴² But if the possibility of Abbot's membership in the second Aurelian Society can now be discounted, he had ample opportunity to know the various Aurelians, who remained as friends of Drury's long after the Society's downfall.

Abbot met at least one of the former members through Rice, who was partially responsible for his friendship with Drury: "One Day a Mr Smeathman a young Man introduced himself to me, by saying he understood by Mr Rice, I was a brother Flycatcher, and had come to see me." Abbot was "not fond of Strangers, but his Address & discourse, soon settled an immediate acquaintance" (N). This was Henry Smeathman, whose collecting efforts in Africa were to influence Abbot's decision to depart for America⁴³. Smeathman appears to have been a teacher of languages. He had formed a "small collection" of British insects, and Abbot later remembered that "among them [was] an English Purple Emperor [*Apatura iris* (L.)], it is rare, I never met with any myself, I gave him a Guinea for it" (N).⁴⁴ Another new friend was Margaret Bentinck, Duchess of Portland, who loaned Abbot insects from her famous natural history cabinet at Bulstrode in Buckinghamshire. The Portland collection was not as well developed in the entomological orders as was Drury's (the Duchess preferred shells), but David E. Allen has observed that at the time it was probably more important overall than the cabinet of the British Museum, and it received the constant attention of naturalists. Although Abbot did not mention visiting Bulstrode in his "Notes," he knew the Duchess as early as June 1768, when he drew a noctuid, *Griposia aprilina* (L.), from among her specimens (C37). Either Drury or Solander, who began to arrange her collection in 1764, could have effected the introduction.⁴⁵

Abbot met the naturalist and illustrator George Edwards as the result of a growing interest in ornithology.⁴⁶ Having gained so much help from *A Natural History of English Insects*, Abbot hoped to acquire a set of Albin's *A Natural History of Birds* (1731-1738), which was being offered at a book auction. His father attended the sale, but instead bought Edwards' four-volume *A Natural History of Uncommon Birds, and . . . other . . . Animals* (1743-1751). Abbot found the book "so much superior to Albins," and was "much pleased with the change" (N). As Edwards had published three more volumes, *Gleanings of Natural History* (1758-1764), Abbot and his father visited the old man at his London residence to arrange a purchase and complete the set. Abbot took along a number of his entomological watercolours, and as he recorded in the "Notes," Edwards "praised them much & desired me by all means to continue drawing, saying no doubt I would be a [p]ublisher hereafter of some work on Natural history." The visit must have taken place before 28 January 1769, when Abbot drew an exotic beetle which Edwards had obtained "fresh from a ship from the East Indies" (H7). At about the same time (N), Abbot received an especially welcome gift, a subscriber's copy of Mark Catesby's *The Natural History of Carolina, Florida and the Bahama Islands* ([1729-] 1731-1743 [1747])⁴⁷ from a benefactress identified as

"Lady Honeywood, widow of Genl. Honeywood."⁴⁸ Recalling the acquisition of such important additions to his library as the Edwards and Catesby titles, Abbot would later observe that "all this you may suppose increased my love in general for Nat. history" (N).

One can well understand how the huge Catesby folios, with their descriptions and vivid illustrations of New World flora and fauna, and Edwards' less majestic but equally exotic volumes, could serve to broaden the horizons of a still-parochial seventeen-year-old student of nature. Moreover, the plates in Abbot's set of Edwards would greatly influence his own work as an artist. Although some time would pass before he began to execute coloured drawings of birds,⁴⁹ Abbot was to adopt the method of ornithological illustration used by Edwards, that which has variously been called "stump and magpie" or "stump and stare". In the tradition, the bird was characteristically perched on a stunted tree, stump or hillock, with sketchily-drawn natural surroundings, often on a smaller scale. The stylized embellishments were of secondary importance to the illustrator, who wished to emphasize the bird. Marcus Simpson has suggested that the tradition might appropriately be called the "bonsai style" because of the diminutive generalized environment in which the birds were portrayed. He has shown that from a number of antecedents, the style emerged fully in Pierre Belon's *L'Histoire de la Natvre des Oyseaux* (1555), and greatly influenced Western practitioners of bird art, including Albin and Edwards, for several centuries. Simpson places Abbot's ornithological watercolours in the mainstream of the tradition, and demonstrates not only a debt to Edwards' style, but also a direct borrowing of compositions and poses from specific plates by Edwards.⁵⁰

Abbot's dependence on a stylized tradition of ornithological illustration explains the greatly differing treatment of plants in his bird and insect compositions. In the former, he could dismiss botanical subjects as incidental embellishments, which did not have to be depicted in full detail or actual scale.⁵¹ However, when he chose to use plants in his entomological illustrations, they were primary and integral features of the composition; as foodplants, actual or supposed, they were to be drawn with the same fidelity (if not in the same detail) as the insects which fed upon them. Eleazar Albin had used the same dual concept in *A Natural History of Birds* (in the "stump and magpie" tradition, with stylized plants) and *A Natural History of English Insects* (which had normal botanical illustration). The plates in Abbot's copy of Catesby furnished examples of another eighteenth-century approach. Although the hillocks and stumps on which Catesby's birds are sometimes portrayed betray the familiar influence which he could not entirely escape, few of his birds were drawn in the stiff profiles characteristic of

Albin, Edwards, Abbot and other traditional illustrators. His style also differed in using fully-drawn and coloured plants. Catesby wished to include both animals and plants as primary subjects in his work, so he combined them on his plates, often with striking effect.⁵² As Abbot only portrayed plants as equal subjects when they served as pabulum for his larvae, he did not need to adopt Catesby's method.

In 1769 Abbot was articled to his father as law clerk and began his training to be an attorney,⁵³ although as he later recalled, "Deeds, Conveyances & Wills, &c. was but little to my liking when my thoughts was engrosed by Natural history" (N). He found whatever time he could for field work, rearing and painting, and in April 1770, when the eleventh annual exhibition of the Society of Artists of Great Britain opened in the Great Room, Spring Garden, Charing Cross, two of his entomological watercolours were among the works on view. Evidently Jacob Bonneau, who was a member of the Society, had arranged to have his former pupil included among the "honorary" (guest) exhibitors. According to the Society's catalogue, Abbot's address was then in Poland Street.⁵⁴ When the first volume of Drury's *Illustrations of Natural History* was published in May of that year, Abbot paid his friend £4/18 for "a best Copy unbound." choosing to commission the binding himself.⁵⁵ Little else remains to document Abbot's activities in 1770-1771 except his annotated drawings of the period, which reveal that he had attained his fullest powers as an entomological illustrator when he was less than twenty years of age.

Abbot continued to rear a variety of British moths and collect widely in many orders, but the most characteristic trend to be discerned in the watercolours executed during the several years before he departed for America is his growing interest in the Nearctic Lepidoptera. He painted a number of striking compositions of American butterflies and moths from his mentor's cabinet and his own growing collection, which had obviously benefitted from his admittance to Drury's group of friends. (Abbot could now participate in the division of duplicates when more extensive parcels of insects were received from overseas collectors, and he was occasionally able to purchase consignments himself.) Late in 1770 Drury was assembling exotic material for the second volume of his *Illustrations*, which was not actually published until 1773. One of his willing sponsors was a close friend, the Quaker physician John Fothergill, who was well known for his generosity in promoting works of natural history.⁵⁶ Abbot was acquainted with Fothergill, who maintained an extensive cabinet in his London residence and a botanical garden at Upton, Essex which contained one of the finest collections of rare plants in England. Like Drury, Fothergill obtained much of his material by furnishing overseas correspondents with directions and apparatus.

When the Jamaican planter and entomological collector Samuel Kuckahn (Keuchan) was resident in London in 1770, he met Drury and Smeathman, and sold Fothergill a small but select cabinet of insects from the West Indies, while auctioning a larger collection of insects, birds, shells and other natural history specimens.⁵⁷ Fothergill loaned his purchase to Drury so that appropriate insects could be described in the *Illustrations*. Considerable space was eventually devoted in the second volume to Kuckahn's Jamaican insects. Abbot drew a number of sphingids from "Mr Kuckahn's Collection" (C92), either before or after it was returned to Fothergill, as well as other exotics collected by Kuckahn (e.g. C89, C96) which were identified as in the Drury and Abbot cabinets. Kuckahn departed for Jamaica late in 1770, and in the following year Drury, who was eager to receive more material from the West Indies, began a lengthy correspondence with the planter, which incidentally revealed that Abbot and Kuckahn had not become acquainted in London.⁵⁸

Although Drury had illustrated and described a number of African insects in his first volume, he had never been able to establish a continuing source of supply. Several of his friends also wished African material, so in 1771 he wrote to Kuckahn that "If you was now in London it is very probable you would hardly be able to withstand ye solicitations you would meet with to go to ye coast of Africa, because your knowledge & experience in natural history is so great as to make every collector desirous you should take ye lead in an affair of this nature."⁵⁹ But whatever Kuckahn's reputation might have been, he was in Jamaica, and it was Henry Smeathman who was eventually chosen to collect in the dark continent. Drury and Fothergill joined with Marmaduke Tunstall, an ornithological enthusiast who was building a substantial natural history cabinet,⁶⁰ in a subscription to finance Smeathman's voyage. Joseph Banks was persuaded to add his share, and the Duchess of Portland was a later contributor. Smeathman, who left for Africa late in 1771, was securely established at Sierra Leone by March 1772. During his African residence he would assemble extensive collections for his friends in London, but a more lasting result was one of the two classic eighteenth-century accounts of termites, on which his reputation as an entomologist is now based.⁶¹ One observer of Smeathman's activities was a dissatisfied law clerk who thought that his own time could be better spent in the sole pursuit of natural history. As John Abbot wrote many years later in his "Notes," "I now began to entertain thoughts of going abroad to collect foreign Insects myself."

NOTES

²⁹The best and most extensive notice of Drury's life (1725-1803) is still the sketch by William Jardine, part of the "Naturalist's Library" biographical series, in Charles H. Smith, *Introduction to the Mammalia* (Edinburgh, 1842), 17-71. Also useful are John O. Westwood's preface and

commentary in his edition of Drury, *Illustrations of exotic entomology* (London, 1837); Arthur G. Grimwade, *London goldsmiths, 1697-1837* (London, 1976), 495-497; and Ambrose Heal, *The London goldsmiths, 1200-1800* (Cambridge, 1935), 144. The majority of Drury's surviving papers, including his extensive letterbook, 1761-1783 (retained copies of letters sent) are in the library of the Entomological Department, British Museum (Natural History), and I am grateful to two successive Librarians, Bernard Clifton and Pamela Gilbert, for access to these materials in person and through photocopy. Citations to the correspondence in these Drury Papers refer to pages in the "Drury letterbook, BM(NH)." C. Davies Sherborn, "Dru Drury," *J. Soc. Bibliophy nat. Hist.* 1 (1937), 109-111, has provided a list of and index to the correspondents. Some of Drury's letters have been printed by Theodore D. A. Cockerell, "Dru Drury, an eighteenth-century entomologist," *Scient. Mon., N.Y.* 14 (1922), 67-82. A number of Drury's notebooks, which record the provenance of many of the insects in his collection, are in the Library, Hope Entomological Collections, University Museum, Oxford University; photocopies have been added to the BM(NH) Drury Papers. Abbot wrote that before their meeting Drury "had been president of the Linnean Society" (N), but the Society was not founded until 1788, and Drury was not admitted as a Fellow until 1799. He was never president. The elderly Abbot evidently confused Drury with Smith.

³⁰The entomological activities of James Petiver (ca. 1663-1718) are mentioned by Wilkinson, *Benjamin Wilkes*, 4, and in the sources cited there.

³¹Drury's efforts to expand his collection are best revealed in his letterbook, BM (NH). He obtained forceps nets ("insect tongs") fashioned according to his pattern from James Bedford, a Birmingham ironworker who manufactured them for Drury by the dozen. Drury sent wooden boxes to his correspondents, each containing a forceps net (sometimes a clap net) and other equipment for collecting insects, including a pincushion stocked with various sizes of pins; for the method see Ronald S. Wilkinson, "The rise and fall of the pincushion," *Entomologist's Rec. J. Var.* 87 (1975), 142-146. The boxes often contained entomological specimens as samples so that the recipients would know what to collect – and, indeed, what not to ship, as Drury, who abhorred damaged insects and took pride in the condition of his collection, at times included a ragged butterfly. Also in the boxes were such luxuries as newspapers and books, and occasionally a bottle of gargle for sore throats, prepared from an old Drury family recipe.

³²Instructions and equipment were sent to prospective British collectors who lived at some distance from London, as relatively little was then known about the entomological fauna of the northern and western counties. Letters demonstrating Drury's practical knowledge are frequent in his papers. An outstanding example was written to Henry Symons, 15 January 1775, Drury letterbook, 338, BM(NH).

³³It is, however, uncertain whether Abbot annotated the earlier watercolours in the Carnegie set as they were completed, or at a somewhat later time.

³⁴Harris, *The aurelian*, v; David E. Allen, "Joseph Dandridge and the first Aurelian Society," *Entomologist's Rec. J. Var.* 78 (1966), 89-94; Ronald S. Wilkinson, "The great Cornhill fire and the demise of the first Aurelian Society," *Entomologist's Rec. J. Var.* 89 (1977), 250-251. Harris, *The aurelian*, v, suggests the hiatus of fourteen years or more, which would indicate a

1762 or 1763 foundation date for the second Society. The meeting-place is inferred from a statement of John Nichols, *Literary anecdotes of the eighteenth century* (London, 1812-1816), 3: 757.

³⁵ Moses Harris (1730-ca. 1788) had a considerable influence on the development of British entomology. His work is discussed by Lisney, *Bibliography*, 156-175, and Ronald S. Wilkinson, "English entomological methods in the seventeenth and eighteenth centuries," part III, *Entomologist's Rec. J. Var.* 80 (1968), 193-200. Drury's letterbook, BM(NH), reveals that Moses had two brothers who were interested in entomology; they were William, a London resident, and John, a harpsichord maker in Boston, Massachusetts. John Harris shipped parcels of insects from New England for Drury's cabinet; the duplicates were sold to other London collectors.

³⁶ Or at least the first two volumes; Peter J. P. Whitehead, "Emanuel Mendes da Costa (1717-91) and the *Conchology, or natural history of shells*," *Bull. Br. Mus. nat. Hist.* (hist. Ser.) 6 (1977), 1-24. Da Costa was a member of both the first and second Aurelian Societies, having been admitted to the first on 7 February 1739/40; Nichols, *Literary anecdotes* 3: 757. Nichols printed a selection from da Costa's correspondence in his series. His collection of da Costa's papers is now in the British Library; Add. MSS. 28534-28544.

³⁷ Roy A. Rauschenberg, "Daniel Carl Solander, naturalist on the 'Endeavour'," *Trans. Am. phil. Soc.*, new Ser. 58, part 8 (1958). Solander (1733-1782) arranged and identified the British Museum's insect collections in 1763-1764, and later furnished Fabricius material for descriptions; Ella Zimsen, *The type material of I. C. Fabricius* (Copenhagen, 1964), *passim*. For Banks (1743-1820) see Edward Smith, *The life of Sir Joseph Banks* (London and New York, 1911); Hector C. Cameron, *Sir Joseph Banks* (Sydney, London and Melbourne, 1952); and *The Banks letters*, ed. Warren R. Dawson (London, 1958). There are useful articles on Banks and Solander in the *Dictionary of scientific biography*. Banks accumulated an extensive entomological collection which was much used by Fabricius; Zimsen, *Fabricius, passim*. He has not been identified as a member of the second Aurelian Society.

³⁸ Lee (1715-1795) owned a large cabinet of insects. Plates made from drawings of some of his Lepidoptera were published as *Coloured specimens to illustrate the natural history of butterflies* (London, 1806). His Linnaean manual, *An introduction to botany* (London, 1760), went through many editions; Eleanor J. Willson, *James Lee and the Vineyard nursery, Hammersmith* (London, 1961); Zimsen, *Fabricius, passim*. David E. Allen, "Joseph Dandridge,"⁹⁴ was the first to suggest Lee's possible membership in the second Aurelian Society.

³⁹ Allen, "John Abbot, pioneer naturalist of Georgia," 146.

⁴⁰ On 10 April 1767 Drury wrote to the Russian naturalist Peter S. Pallas, who was an honorary Fellow of the Society, that "our Aurelian Society is dissolv'd, therefore ye Books you were so obliging to promise will arrive too late. — Its dissolution has been occasion'd by some disagreements between Mr. Da Costa chiefly & some other Members, but I believe another Society if not two more, will be establish'd on its ruins one of w[hi]ch will be on a more general Plan"; Drury letterbook, 104, BM(NH). As late as 27 April

1767 Drury informed John Wright, a seedsman at Quebec, that he should ship any insects he thought proper: "I shall abide by the determination of the Aurelian Society for its [the parcel's] value." The letter reveals Drury's obvious hope for a speedy resuscitation; Drury letterbook, 106, BM(NH). (The Society had determined the monetary value of a number of shipments of insects from overseas collectors.) Drury later observed to Pallas that the Society "wanted but 2 or 3 more good Members to have made it become respectable, but Da Costa's Temper & Principle was sufficient to overturn a Kingdom"; "Dru" Drury (hereafter Drury) to Peter S. Pallas, 28 February 1768, Drury letterbook, 119, BM(NH). Much later, Drury wrote to a friend that "No Man ever entertained a greater regard for a society than I did for that & therefore its dissolution gave me inexpressible concern"; Drury to Martin T. Brännich, 14 January 1770, Drury letterbook, 186, BM(NH). Brännich, a professor at Copenhagen, had been an occasional visitor to the Society's meetings. Johann C. Fabricius, who characterized the Aurelian group as a small private society dedicated to research on insects and their transformations, agreed that the body was dissolved because of the inability of the members to get along with each other; *Briefe aus London vermischten Inhalts* (Dessau and Leipzig, 1784), 124.

⁴¹Fabricius' correspondence indicates that although he was introduced to Drury by Solander, he was not a member of the second Aurelian Society, which was defunct when he arrived in England in the spring of 1767. The London residences of Fabricius are documented in his *Briefe* and a paper based on the volume, Angus Armitage, "A naturalist's vacation: the letters of J. C. Fabricius," *Ann. Sci.* 14 (1958), 116-131. Zimsen, *Fabricius*, furnishes much additional information. Soren L. Tuxen, "The entomologist, J. C. Fabricius," *A. Rev. Ent.* 12 (1967), 1-14, is a useful introduction in English to Fabricius' work.

⁴²Drury's short-lived Society of Entomologists of London, about which very little is known, is not to be confused with the third Aurelian Society, founded by Adrian H. Haworth in 1801.

⁴³Fabricius, *Briefe*, 119-120, stated that Smeathman (who was one of his oldest friends) was a member of the second Aurelian Society. The only extensive account of Smeathman's life is that of Francis J. Griffin, "Henry Smeathman (?-1786)," *Proc. R. ent. Soc. Lond. (C)* 17 (1942), 1-9. There is a clue to Smeathman's year of birth. Emanuel M. da Costa, "Notices and anecdotes of literati, collectors, &c.," *Gentleman's Mag.* 82, part 1 (1812), 517, recorded that when Smeathman died on 1 July 1786, Drury indicated that he "was in his 42d year."

⁴⁴H24-25, undated watercolours, depict male and female specimens of *iris* in arrangements characteristic of Abbot's efforts in 1767-1768. The insects may have been from Drury's cabinet or perhaps the Duchess of Portland's collection. The female was taken "in Combe Wood the latter end of July."

⁴⁵Unless, of course, Abbot had the Duchess' insects at second hand. Comments about Bentinck (1714-1785) and her collections are in Allen, *The naturalist in Britain*, 29-30; Dance, *Shell collecting*, 103-107; and the *Dictionary of national biography*, in the entry for her father, Edward Harley (1689-1741). Abbot's C37 is annotated "Marvel du Jour. Duchess of Portland." It is dated 8 June 1768.

⁴⁶Edwards (1694-1773), librarian to the Royal College of Physicians, revealed much about his own life in his books, which contain valuable information about persons and events in eighteenth-century natural history. Lisney, *Bibliography*, 127-144, has furnished descriptions of the seven volumes for which Edwards is best remembered; see also *Some memoirs of the life and works of George Edwards* (London, 1776), published by the bookseller James Robson.

⁴⁷George F. Frick and Raymond P. Stearns, *Mark Catesby, the colonial Audubon* (Urbana, Ill., 1961) is a well-written account of Catesby's life and work. George Edwards recorded that his good friend Catesby (1683-1749) "put me on etching Plates myself, as he had done in his Works; and not only so, but invited me to see him work at Etching, and gave me all the necessary Hints and Instructions"; *A natural history of uncommon birds* (London, 1743-1751), I: xvii.

⁴⁸The search for "Lady Honeywood" has led scholars to a curious puzzle. "The Hon. General Honeywood" is listed among Catesby's subscribers ("encouragers") in the first volume. This was General Sir Philip Honeywood (d. 1752), whose honours are documented in Joseph Haydn and Horace Ockerby, *The book of dignities* (London, 1894), 764, 857. Elsa G. Allen was informed by the Honeywood family historian that the General did not marry; his conclusion was that Abbot received the Catesby volumes from the only Lady Honeywood supposed to be living at the time, Dorothy (Filmer) Honeywood (d. 1781), second wife of Sir John Honeywood; Sir William Honeywood to Elsa G. Allen, 3 August 1955, Elsa G. Allen Papers, Cornell University Archives. Allen identified Abbot's benefactress as Dorothy Honeywood; "John Abbot, pioneer naturalist of Georgia," 147. But General Philip Honeywood's will (Prerogative Court of Canterbury Wills, f. 796, Public Record Office, London) indicates that Allen's informant was mistaken, and that Abbot may have been correct. The General was married, and he did leave a widow, Sarah. Her date of death has not yet been located.

⁴⁹No watercolours of birds are known to predate the series which Abbot began to send to John Francillon in 1792. However, the absence of extant drawings does not prove that Abbot waited so long to commence ornithological illustration. Francillon's letters to the Manchester manufacturer John Leigh Philips document the sale of many of Abbot's bird drawings to Chetham's Library, Manchester, between 1792 and 1809; Add. MSS. 29533, f. 75r-104r, British Library. Chetham's consigned the watercolours to Christie, Manson & Woods for auction, and they were sold with Abbot's relevant notes on 1 October 1980 to a firm of dealers who unfortunately broke up the extensive set for resale to individual customers. Luckily, coloured slides of the drawings had been preserved in the Elsa G. Allen Papers, Cornell University Archives, many years before.

⁵⁰Simpson, "The artist-naturalist John Abbot."

⁵¹Francillon's customers at Chetham's Library complained about the botanical content of Abbot's ornithological drawings, and the reply was surely one of the classic defenses of the "bonsai" tradition: "the Plants, Stumps & Moss, are not given as fine drawings, but only something for the Bird to stand or perch upon. . . those who see them should only examine the Birds, and look upon the rest merely to carry or support the Bird"; John Francillon to John L. Philips, Add. MSS. 29533, f. 96r-97v, British Library.

⁵²Frick and Stearns, *Mark Catesby*, 60-62.

⁵³Apprenticeship Books, Series 1. R. 1, 26, f. 17, Public Record Office, London.

⁵⁴Algernon Graves, *The Society of Artists of Great Britain, 1760-1791; The Free Society of Artists, 1761-1783* (London, 1907), *passim*.

⁵⁵MS. account book, Drury Papers, BM(NH). Drury explained in a letter that "my Work is colourd in general, in a common manner, the price of w[hi]ch is £2. 12. 6 agreeable to my Advertisements; but there are some Copies that I dispose of among my Friends that are done in a superior manner ye price of w[hi]ch is £5. 5. 0. I dare not mention this in my advertisements for if I did, I should never dispose of those of the common sort of w[hi]ch I have a number of Copies unsold"; Drury to Captain Davies, 3 July 1770, Drury letterbook, 206, BM(NH). Such friends as Abbot received "best copies," which, of course, cost less if unbound.

⁵⁶Richard H. Fox, *Dr. John Fothergill and his friends* (London, 1919); *Chain of friendship: selected letters of Dr. John Fothergill of London*, ed. Betsy C. Corner and Christopher C. Booth (Cambridge, Mass., 1971). Fothergill (1712-1780) was a patron of the American naturalist William Bartram; Bartram, *Botanical and zoological drawings, 1756-1788*, ed. Joseph A. Ewan (Philadelphia, 1968).

⁵⁷Little is known about Kuckahn (Drury called him Keuchan) except the evidence in the Drury correspondence. The *Daily advertiser* (16 May 1770), 3, announced the auction: "To be Sold . . . by SAMUEL PATERSON, At Essex-House, in Essex Street, Strand, this and the three following Days, at Twelve o'Clock, A Capital Collection of American Moths and Butterflies, Beetles, and other uncommon Insects; some rare Birds, Shells, Animals in Spirits, and other Subjects of Natural History, collected by Mr. KUCKAHN, during his six Years Residence in various Parts of America and the West-Indies; the Whole in high Preservation. Catalogues may be had gratis at Essex-House aforesaid."

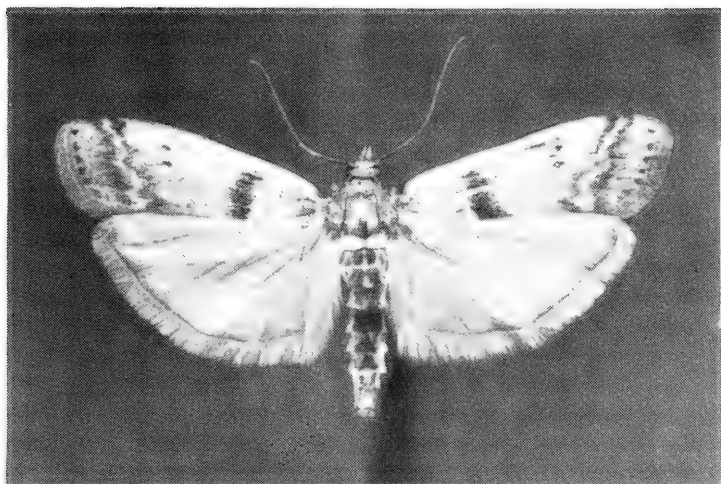
⁵⁸Drury wrote to Kuckahn after Abbot's departure that "a young Gentleman" had "gone to settle at Virginia in pursuit of Natural hist[ory] his Name is Abbot. . .," suggesting that Abbot and the planter had not met; Drury to Samuel Kuckahn, 21 January 1775, Drury letterbook, 339, BM(NH).

⁵⁹Drury to Samuel Kuckahn, 12 January 1771, Drury letterbook, 226, BM(NH).

⁶⁰Tunstall (1743-1790), author of *Ornithologia Britannica* (London, 1771), maintained the cabinet at his Welbeck Street residence. A brief account of his life is in the *Dictionary of national biography*.

⁶¹Henry Smeathman, "Some account of the termites, which are found in Africa and other hot climates," *Phil. Trans. R. Soc.* 71 (1781), 139-192, with admirable illustrations also by Smeathman, who was assisted in the taxonomic aspects of his paper by Solander. Smeathman's account was preceded by that of Johan G. Koenig, "Naturgeschichte der sogenannten weisen Ameisen," *Beschafft. berl. Ges. naturf. Freunde* 4 (1779), 1-28.

Notes and Observations



Zophodia convolutella Hbn.

Chestfield, Kent, 30.iv.1983. Alar expanse 30mm.

Figure enlarged approximately x 2.5.

ZOPHODIA CONVOLUTELLA (HUEBNER) (LEP.: PYRALIDAE)
NEW TO BRITAIN. — On the 30th April 1983, I took a specimen of a striking phycitid moth at m.v. light in my garden at Chestfield, Kent which Mr. D. Carter (British Museum, Natural History) kindly identified as *Zophodia convolutella* (Huebner). According to Roesler (1973, *Microlepidoptera Palaearctica: Phycitinae*), this species has a wide distribution abroad including Spain, Italy, Germany, Belgium, Switzerland, Austria, Czechoslovakia, Eastern Russia, Scandinavia, Canada and the U.S.A. Lhomme (1935, *Cat. Lep. de France et de Belgique*, 2:22) gives its status in France and Belgium as "Toujours rare". The larva is stated to feed on currant and gooseberry, eating the leaves, flowers and fruits from June to October, and the moth to be found in March and April. — J. ROCHE, 2 Longtye Drive, Chestfield, Whitstable, Kent. [We are indebted to Mr. E. S. Bradford for a photo of Mr. Roche's specimen, from which the accompanying figure was taken. — EDITOR].

UNIVOLTINE AND BIVOLTINE RACES OF POLYOMMATUS ICARUS ROTT. — Now that it has been shown beyond all reasonable doubt through the painstaking work of Dr. O. Höegh-Guldberg and F. V. L. Jarvis, that the univoltine and bivoltine *Ariciae* are distinct species I wonder if any person, or group of people, with the necessary patience and expertise, will undertake similar work with *Polyommatus icarus*. Not that there is any likelihood of two species being involved in this case, but the situation is

sufficiently interesting to call for investigation. I have a feeling that it is often assumed that the Common Blue gradually becomes more and more single brooded as one goes further North until double broodedness finally gives way to single broodedness. But in my experience the situation is very difficult.

I have lived in what is now Cumbria since 1938 and consequently have had many opportunities of observing this species locally. I have found that the bivoltine and univoltine races meet in the area between Carlisle and Carnforth but are almost, though not quite, out of contact with one another. The bivoltine race flies along the coast, and specimens are morphologically identical with the bivoltine populations further South. The univoltine race occurs further inland, particularly on carboniferous limestone hills, and is in outward appearance identical with the univoltine populations of Scotland, where I am particularly well acquainted with the species in the Inner Hebrides, for instance, Mull and Skye, and the smaller Islands such as Iona, Staffa and Muck, as well as the adjacent area of the mainland.

It is not easy to describe accurately the visible differences between the bivoltine and univoltine races — in any case the species is a very variable one — but certain features tend to stand out and indicate to a trained eye to which race a specimen belongs. For instance, the univoltines are larger than the bivoltines; the underside of the male is paler dove grey without much trace of the leaden tint that so often characterises the bivoltines; the underside spotting in the univoltines is less conspicuous and often reduced; the lunules tend to be more reddish in tint rather than orange. The upperside of the females is in most cases much bluer, and the reddish lunules much more prominent on both surfaces, in the univoltines. I have my series from my collection in front of me as I write these notes, and I realise that there are many exceptions, but in the main the above characters hold good and are reasonably consistent. Suffice it to say that the two races in general look distinct and do not merge imperceptibly into one another.

To return to Cumbria, the bivoltines along the coast fly from mid-May (later in cold Springs) to mid-June, and again from early August to early September. In size there is little difference between the two broods, either in individual specimens or in larval numbers. There is no perceptible seasonal variation. The univoltines emerge in mid-June and fly through July. In rather elevated colonies such as that at Smardale near Kirkby Stephan worn specimens sometimes last until early August. So the emergence period of the two races does not overlap even though not many miles may separate one population from the other. But there are one or two interesting situations. For instance, on Warton Crag near Carnforth, incidentally just over the boundary into Lancashire, though geologically and ecologically part of the limestone country around the head of More-

combe Bay which is otherwise in Cumbria, a typical univoltine race of large individuals flies from mid-June through July, but at least in warm summers a very limited emergence of much smaller individuals appears at the end of August and the beginning of September. This may also occur occasionally on other adjacent limestone hills, but while I was Vicar of Hutton Roof from 1951-1962 I never saw a specimen on Hutton Roof Crag which could be assigned to a second brood. Only about 8 miles further inland from Warton Crag the species was apparently strictly univoltine. Conversely, at Grune Point north of Silloth where there is the usual coastal bivoltine race I have on rare occasions seen one or two large specimens in July which would from the time of emergence and from their appearance seem to be individuals of an univoltine race.

The whole question seems to be an intriguing one. The two races appear to have mixed in just one or two places, but normally they cannot do so because of the different times of emergence. And their appearance remains distinct. If in captivity specimens of the bivoltine race were artificially induced to emerge later than in the wild so that they could be paired with univoltines, would there be any sign of incipient genetic imbalance such as that which conclusively separated the two *Ariciae*? — The Reverend J. H. VINE HALL, 3 The Green, Melmerby, Penrith, Cumbria CA101HE.

PHYLLONORYCTER CORYLIFOLIELLA HBN. F. BETULAE Z.: NEW TO ESSEX. — During October 1983, Mr. C. Smith and I discovered the mines of *Phyllonorycter corylifoliella* f. *betulae* on the upper surfaces of several leaves on a single sapling silver birch tree (*Betula pendula*) at St. Mary Magdalene Churchyard, Museum Nature Reserve, East Ham, Essex, (grid ref.: TQ 4282). This identification was subsequently confirmed by Maitland Emmet to whom I am most grateful. Form *betulae* has a northern and western distribution in Britain, and because of this apparent geographical restriction, coupled with the fact that it is univoltine (the typical form being bivoltine), some entomologists regard it as a distinct species. Two tenanted mines were collected and freeze-dried for this Museum's collections. It will be most interesting to see whether this moth manages to spread to the only other silver birch tree at the Nature Reserve — that which was planted by Her Majesty The Queen to commemorate her visit here on 14th December, 1983! — C. W. PLANT, Assistant Curator, Natural Sciences (Biology), Passmore Edwards Museum, Romford Road, Stratford, London E15 4LZ.

PINE LADYBIRDS ON A LIME TREE. — While visiting the open parkland of Bromley Library Gardens on 23 October 1983, I was surprised to find a lime tree attracting a number of ladybird species, two of which are normally associated with pine trees.

Since it was first discovered in this country by Morley in 1939 (Morley, *Trans. Suff. Nat. Soc.* (1941), 4: 247-248), *Harmonia quadripunctata* Pontoppidan has spread throughout England and is

now quite widespread and common on pine, larch, spruce, fir etc. On this occasion, there were seven specimens actively crawling about the lime trunk. *Aphidecta obliterata* L. is another ladybird usually associated with fir trees, yet on this tree trunk there were three specimens. The other ladybird species present were *Coccinella septempunctata* L. — two specimens —, *Adalia bipunctata* L., *Thea vigintiduopunctata* L. and *Propylea quattuordecimpunctata* L. — one specimen of each.

The particular lime tree in question was one of a group of seven trees (a cherry, a hawthorn, a birch and three planes being the others) and yet was the only tree trunk to be attracting insects. Apart from the ladybirds there were a bug, a crane fly and several spiders. It was about two feet in diameter and was very much the same size as the birch and the planes. It was not particularly lichen-covered, or the most sunned. Why the lime tree should be the most attractive to these species is very intriguing. The only explanation I can offer is that the rough bark of the lime offered more crevices suitable for hibernation and concealment. — RICHARD JONES, 29 Dean Road, Willesden Green, London NW2.

A LARVAL HABITAT OF THE WHITE AND BUFF ERMINE MOTHS (*SPILOSOMA MENTHASTRI* ESP. AND *S. LUTEA* HUFN.). — The standard works are remarkably vague, and even erroneous, regarding the larval foodplants of these fairly common and conspicuous larvae. Thus for *S. menthastri*, South (*Moths of the British Isles*), writes that the caterpillars feed on low-growing plants and do not appear specially attached to any particular kind; while in the *Butterflies and Moths of Great Britain and Ireland* (ed. J. Heath), the species is stated to be polyphagous on herbaceous plants without showing particular preference! Surprisingly, though perhaps it is not a coincidence, Barrett (*Lepidoptera of the British Islands*) has only 'all sorts of low growing plants'. Similar unhelpful comments on *S. lutea* appear in all three works. The fact is, so far as S. E. England is concerned, and I suspect elsewhere in Britain, the caterpillars of both species exhibit decided preferences. I have obtained them most readily by finding walls, railings, fences, steep banks or hedges heavily festooned with certain climbing plants, especially *Clematis vitalba*, hop (*Humulus lupulus*), Virginian creeper (*Parthenocissus quinquefolia*), bindweed (*Convolvulus arvensis* and *Calystegia sepium*), Russian Vine (*Fallopia aubertii*), plus elder (*Sambucus nigra*) which is often found in association with these plants. When these are shaken vigorously, the caterpillars come tumbling down, together with those of *Diataraxia oleracea* L. and *Melanchra persicariae* L. However, neither *menthastri* nor *lutea* larvae appear to be as common to-day as they were between the wars and in the immediate post-War period.

The first attempt at specifying the larval foodplants of these species seems to have been made by Chalmers-Hunt (*Lepidoptera*

of Kent), although unfortunately the records give little indication of relative preference for the plants listed. However, for *lutea*, dock is suggested as the main pabulum in Kent, and this is interesting as E. Newman (*Natural History of British Moths*) stated that the caterpillars are most readily found by examining docks on hedge banks. Barrett's observation (*op. cit.*), that *menthastris* larvae were to be found especially on weeds in gardens is interesting for Chalmers-Hunt suggests that this species seems to have a preference for urban localities. — B. K. WEST, 36 Briar Road, Bexley, Kent.

A THRIVING POPULATION OF *PONTANIA CRASSIPES* (THOMSON) (HYM.: TENTHREDINIDAE) IN SOUTHERN SCOTLAND. —

On July 30th, 1983, I visited the highest Peeblesshire hills in order to try and confirm a remark made by Mr. A. Buckham about galls on the leaves of *Salix herbacea* L. seen on the summit of Broad Law, 840m. (NT 147 236). The only previous evidence for the presence of the one likely causative organism, the arctic-alpine *Pontania crassipes* (Thomson), in the Scottish Borders was the finding of a few old galls near plants of *S. herbacea* on White Coomb, 822m., Selkirkshire (Liston, 1983, *Entomologist's mon. Mag.* 119: 67-70). Since the hostplant was only seen on the craggy areas of White Coomb, it was to Polmood Craig (700-800m.), an extensive area of crags on the north slope of Broad Law, that I first went. About an hour's searching of the crags failed to reveal a single plant of *S. herbacea*.

Next, I tried crawling from the upper edge of the crags to the summit, looking closely at the short, sheep-grazed vegetation. At one spot I found two small plants of *S. herbacea* without any galls. Feeling rather tired on reaching the summit, I decided to start walking back to my transport at Manor Head, by the most direct route. I had descended no more than 15m. altitudinally along the north-east shoulder of the hill, when I found myself treading on an area glowing with mature, red *Pontania crassipes* galls. Many more patches of willow were found, not by looking for the plants, but because the eye was caught by the red galls, though a few remained green. The willow occurred interspersed with grass, *Empetrum* and *Vaccinium* in patches of a few square metres in area, always where the soil was very thin. About half of the leaves on all plants bore galls. The lowest altitude at which hostplant and galls were found was 780m.

Retracing my steps over Cramalt Craig (830m.) I again started to find sizeable patches of *S. herbacea* with many galls, though the willow was only on the north-facing slopes, and there were fewer plants than on Broad Law. The ridge of Dun Law (788m.), Fifescar Knowe (808m.) and Dollar Law (817m.) apparently has no *S. herbacea*.

About 300 galls were collected, from which about 220 adult *P. crassipes* emerged in January and early February 1984 after having been kept in a fridge for a few weeks then brought into a

heated room. No parasites were present, which suggests to me that at some time, perhaps during a slightly warmer climatic period, the population of *Pontania* became so small as to cause the extinction of its parasite community. The nearest potential parasites are those attacking *Pontania bridgmanii* (Cameron) and *P. pedunculi* (Hartig) which form galls on *Salix aurita* L. These two sawflies are found no closer than 2 miles from the population of *crassipes*, and at least 400m. lower. — A. D. LISTON, 99 Clermiston Road, Edinburgh, EH12 6UU.

RE-DISCOVERY OF *TACHYPEZA HEERI* ZETT. AND *TACHYPEZA TRUNCORUM* (FALL.) (DIPTERA, EMPIDIDAE) IN SCOTLAND. — On 15 June 1982 at Dalnapot Hill, Elgin VC 95 (O.S. grid ref. NJ 1637) I captured several *Tachypeza* which were walking on bark at the base of a live birch tree. Later examination that evening under the microscope showed these to be the very common and widespread species *Tachypeza nubila* Mg. with the exception of a single female *T. heeri* Zett. Hitherto, the latter species was known in Britain from only two females, the first taken on 6 July 1902 at Dunphail, Elgin (F. Jenkinson) and the second on 1 August 1935 at Aviemore, Inverness (C. G. Lamb), the records given by Collin, J. E. (1961), *British Flies*, 6: *Empididae* (Cambridge Univ. Press).

On 22 June 1982 in Glen Tromie, Easternness VC 96 (NN 7897) I found a single large, dark male *Tachypeza* on the trunk of an ancient alder beside the River Tromie. This proved to be *T. truncorum* Fall. previously recorded as British from a male taken on 27 June 1917 at Rannoch, Perthshire (J.J.F.X.King) and a female found in June 1905 at Nethy Bridge, Inverness (C.G.Lamb), see Collin (*op.cit.*). *T. truncorum* is common throughout Scandinavia and *T. heeri* is rather uncommon in northern Fennoscandia according to Chvála, M. (1975), *The Tachydromiinae (Dip. Empididae) of Fennoscandia and Denmark (Fauna Ent. Scand. 3)*. In Scotland these two species are apparently much rarer than *T. nubila*, and it will be interesting to see whether further intensive recording will reveal them to be present outside the north-east highlands, where the great majority of boreal Diptera have been found. — Dr. I. F. G. McLEAN, Nature Conservancy Council 19/20 Belgrave Square London SW1X 8PY.

EUPITHECIA VALERIANATA HB.: VALERIAN PUG (LEP.: GEOMETRIDAE) IN SUTHERLAND. — The light which operates at Rogart in Sutherland (O.S. grid ref. NC 754 007) as part of the Rothamsted Insect Survey (Site number 421) produced two individuals of this species during July 1983 — one, a male, on the night of 6th/7th and another, a female on the 25th/26th. The identity of both specimens was confirmed by examination of the genitalia.

This record constitutes a large extension northwards of *valerianata*'s known distribution. The species is not known to be migratory and there is no reason to suspect that it has suddenly started to

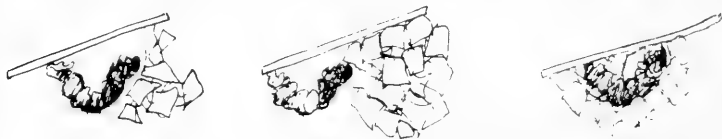
spread northwards. The most likely explanation is that it has always been resident in this part of Scotland but up until now has remained undiscovered.

If studied with an open mind many of the *Eupithecia*'s which are, after all, difficult to identify and easy to overlook, may prove to be much more widespread than is presently accepted.

Thanks are extended to Mr. M. Canham for operating the light trap at Rogart and for identifying all but the most unusual specimens and to Mr. B. Skinner for his comments on the distribution of *Eupithecia valerianata*. — ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Hertfordshire.

BREEDING SCHRANKIA COSTAESTRIGALIS STEPH.: PINION-STREAKED SNOOT. — A female of this moth taken here in my garden trap on the night of 22/23 August 1983 laid about 25 eggs. These hatched and the young larvae were given lettuce leaves, but after the first instar their rate of growth became noticeably slower. At this stage I had 19 first and second instar larvae, and decided to change their diet and try them with sliced runner beans, upon which G. M. Haggett had successfully reared its congener *S. taenialis* Hbn. (see Haggett, *Larvae of the British Lepidoptera Not Figured by Buckler*, 141). The result was that they fed well on these (including the small pink beans), and thenceforth grew very rapidly, which presented me with my next problem.

I noticed one or two full grown larvae hanging vertically from the top of the plastic container, spinning a few threads but doing nothing else apart from shrinking. Worried that they might need special conditions in which to pupate, I 'phoned Mr. Haggett who suggested I use small particles of vermiculite (obtainable from garden nurseries) from which to suspend themselves. Having no vermiculite, I decided to use woodwool mixed with tiny pieces of soft toilet tissue. Although this took time to prepare, the trouble was worthwhile as the larvae immediately suspended themselves from the woodwool and fixed the tiny pieces of tissue around themselves.



Consequently, all those larvae which formed proper cocoons in the manner described produced perfect insects, whereas from the larvae that were past the stage of making cocoons, nine in all, only one perfect moth emerged, three emerged crippled and five failed to emerge having dried up. So it would seem the cocoon retains some moisture content essential to the proper emergence of the perfect insect. — R. BELL, Northwood Lodge, Northwood Park, Sparsholt, Hampshire.

METOECUS PARADOXUS L. (COL.: RHIPIPHORIDAE) BREEDING IN A ROOF NEST IN W. KENT. — This elusive and remarkable parasitic species, the Wasp-nest Beetle, is considered to inhabit almost exclusively nests built in the ground (e.g. in banks) and not, or only very seldom, those in elevated situations such as trees or buildings. Probably, therefore, a notable find of the beetle related to me in the early 1960s by R. L. E. Ford (then of Watkins & Doncaster Ltd.) ought to be put on record, since I doubt whether it was ever published. I do not recall exact details, but at all events Mr. Ford found several specimens of *Metoecus* one autumn about that time in the attic or loft of his house at Bexleyheath, N.W. Kent, where wasps had a large nest in the rafters. This is paralleled by a record in Fowler & Donisthorpe (1913, *Col. Brit. Isl.*, 6:299): "Bury [Suffolk] . . . one in a nest in a roof 30 feet from the ground (Tuck)". The Bexleyheath occurrence is further noteworthy in being one of the very few known, apparently, in Kent — I can cite only Charing (Chitty) and Paddock Wood (Masse) in the eastern and western vice-county respectively, though there may perhaps be others — and it must surely be the nearest yet to London. I should mention in passing that a few years ago my friend Dudley Collins took and kindly passed to me a specimen settling from flight on his garden lawn at Carshalton Beeches, near Croydon, Surrey — a county for which there are many records. — A. A. ALLEN.

A FURTHER NORTHERN RECORD OF COCHYLIDIA IMPLICITANA (WOCKE). — Recently while looking through some micro's from a Rothamsted trap operated at Wykeham Forest, North Yorkshire (VC62) I came across a worn Cochyliid with which I was unfamiliar. The batch of moths from which it came had been collected between 2nd & 10th August 1982. Examination of the genitalia showed it to be *Cochylidia implicitana* (Wocke). Bradley, Tremewan & Smith (1973, *British Tortricoid Moths* 1:76) give the distribution of this species as 'almost entirely confined to the south of England' but refer to the moth taken by Dr. N. Birkett at Walney Island, Lancashire on 2nd August 1955 (*Ent. Rec.* 67:331) as the most northerly record. The present record extends the northern limit of the species slightly as well as being the first Yorkshire occurrence. — H. E. BEAUMONT, 7 Brampton Road, West Melton, Rotherham, South Yorks., S63 6AN.

TRIXOMASIA CAPRIMULGELLA STT. IN KENT. — On the 19th July 1981, after sweeping grasses and vegetation around the base of a large old pollarded oak in East Blean Wood, I noticed, amongst other things, a small tineid moth skipping about in the bag of the sweep net. On returning home I determined it as a specimen of this rather rare species. I believe this is the first record of its occurrence in Kent. — E. S. BRADFORD, "Brooklands", Pean Hill, Canterbury Road, Whitstable, Kent CT5 3BB.

ON THE FOODPLANTS OF *CHRYSOLINA STAPHYLEA* L. (COL.: CHRYSOMELIDAE). — I was interested to read the concluding remarks in A. A. Allen's note concerning the foodplants of *Chrysolina* spp. (1983, *Ent. Rec.*, **95**: 152) of the association of *Chrysolina staphylea* L. with *Ranunculus* in Britain. This prompted me to record here a few observations of my own on other host-plants of this species in West Cumbria. *C. staphylea* appears to be quite well distributed in the West Cumbrian Region. It is not uncommon, and occurs in a number of localities both inland and on the coast. On a number of occasions I have come across the adults and larvae feeding on *Plantago lanceolata*, and it was particularly abundant on this plant along the cliff tops near Fleswick Bay (NX94.13), on 22nd April, 1981. A number of adults were present and many larvae in all stages of development were found at the base of individual plants, mainly on the ground and feeding on the lower leaves, where they made large irregular notch marks. While grubbing for beetles on the saltmarsh near Waberthwaite Church. (SD10.95), on 27th September, 1980 I found *C. staphylea*, this time on *Plantago maritima* and *Aster tripolium*. Both adults and larvae were found around the base of these plants and feeding marks were present on the leaves. The beetle has occurred in other saltmarsh situations on the same species of plants, and it is abundant around the estuaries of the River Irt and Mite near Ravenglass (SD09).

In the above environment it would be interesting to discover how the adults and the external feeding larvae of *C. staphylea* are able to survive being covered by water during periods of high tide, and if they are adapted in some way to cope with a sudden rise in the water level. I have not carried out any observations on this particular aspect of their behaviour, but on 27th. September, 1980 near Friday Point by the River Esk (SD19), I did find one live adult which was completely submerged and clinging to a stem of Sea Aster in a small, shallow pool of water left by the receding tide.

I would also like to mention here that I have found *Chrysolina banksi* (F.) in association with *Plantago lanceolata* on the south coast. Adults and larvae occurred in moderate numbers on this plant on a small piece of waste ground near Gilkicker Point, Gosport, South Hants. (SZ60.97), during April, 1976. A number of plant hosts for *C. banksi* are listed in the key to the larvae of the British *Chrysolina* by J. Marshall (1979, *Syst. Ent.*, **4**:414), and all are in the family Labiatae, but not Plantaginaceae. — R. W. J. READ, 43 Holly Terrace, Hensingham, Whitehaven, Cumbria CA28 8RF.

STROPHEDRA NITIDANA FABR. (LEP.: TORTRICIDAE) IN CUMBRIA (VC 69). — In early November 1983, I collected a number of mined oak leaves from a wood at Seatle, near Newby Bridge, for the purpose of rearing species of *Nepticulidae* and *Phyllonorycter*. Among the leaves was one with a frass-covered cocoon attached to the under surface, on a patch from which the soft tissue, as far

as the upper epidermis, had been eaten. I kept this leaf in a sealed container, at first in a cool place, and from January in a warm room. A specimen of *Strophedra nitidana* emerged on 27th February, 1984. Early unconfirmed records for this species in Lancashire, Westmorland and Cumberland, detailed in *British Tortricoid Moths* Vol. 2, by Bradley, Tremewan and Smith (1979), are therefore probably authentic. — E. F. HANCOCK, Abbotsford, Belmont, Ulverston, Cumbria.

HYPSPYOGIA COSTALIS F. (LEP.: PYRALIDAE): THE IMAGO IN NOVEMBER. — Amongst several *Nomophila noctuella* D. & S. and *Autographa gamma* L., taken from my actinic light trap here in Stroud on 3rd November 1983, was a single specimen of *H. costalis* in fresh condition. This very late date prompted me to glean through my past records of the species, where I find that the latest date previously recorded in the county, at light, is — Stockend Wood, near Stroud, three at light on 2nd September 1978. Could the former record therefore be indicative of a possible second emergence? — M. N. McCREA, 3, Blockley Cottages, Middle Street, Uplands, Stroud, Glos., GL5 1TQ.

MODERN DISPERSAL OF THE EUROPEAN SKIPPER: THYMELICUS LINEOLA OCHS. (LEP.: HESPERIIDAE). — In July 1977 I was working in the northern part of the lower peninsula of Michigan. I had driven many miles and, as it was mid-afternoon, decided to pull over onto the grass, tape my correspondence and take a short walk. I had purchased two cans of Coca Cola, and drank one as I dictated my reports. The day was hot so I left my windows down as I left the auto for a walk to search the scrubby low growth, that abounded in the area, for larvae.

After approximately one half hour of unsuccessful search but a pleasant walk, I returned to my automobile. To my surprise I found no less than fourteen *T. lineola* imbibing from some "Coke" that was on the top and side of the empty can on my dashboard. I had noticed a few *lineola* on my walk, but certainly nothing of a population explosion.

Northern lower Michigan, with its unspoiled scenery and lakes, is a tourist spot in the summer. On that particular afternoon, by casual observation, I counted license plates for twelve different states. Because of the popularity of campers and caravans, it would not seem improbable that a tourist from, say Kansas, could pick up some adults in his trailer, take a long day's drive home, and accidentally release them there. The species does seem to be engaged in a relatively rapid spread in recent years. — CHRISTOPHER A. YOUNG, M. A. 15874 Alexander, Livonia, Michigan 48154, U.S.A.

EARLY OCCURRENCE OF BISTON BETULARIA L. (PEPPERED MOTH) IN THE WILD. — I noted a single example of this moth at light here in Stroud on 20th April 1983, and in 1982 observed

it in the same locality as late as 31st August. Although the text books indicate it as being univoltine, I wonder if there is not occasionally a second generation. — M. N. McCREA, 3 Blockley Cottages, Middle Street, Uplands, Stroud, Glos GL5 1TQ.

CYPHOSTETHUS TRISTRIATUS F. (HEM.: ACANTHOSOMATIDAE) ON CYPRESS IN E. SURREY. — A single specimen of this handsome shield-bug (green marked with red), formerly thought to be confined to juniper, was found by my friend Dudley Collins sunning itself on a Lawson cypress (*Chamaecyparis lawsoniana*) in his garden at Carshalton Beeches on 25.vii.77, and is now in my collection. It was kept alive for some time during which it was seen to feed on the green cones of the cypress and apparently also the shoots. There was no *Juniperus* nearby from which it might have strayed, unless in an adjacent garden. Since finding the bug, Mr. Collins has kept a constant look-out for further examples in any stage on the tree, but so far without result, though a second one occurred inside a window of the house on Christmas Day last.

There are several records of *C. tristriatus* from *Chamaecyparis* and *Cupressus*, mostly *lawsoniana*, in recent years, including the occurrence of a colony on that host near Farnham in west Surrey (Carter and Young, 1974, *Ent. mon. Mag.*, **109**: 180); but the present one relates to the other side of the county, almost within the metropolitan area, where *Cyphostethus* cannot be at all common to-day because of the drastic reduction of our native juniper in those parts. It is opportune, therefore, that the insect is now transferring its attention to a host of which there is a limitless supply in the suburban districts. Lawson cypress in one form or another is excessively common in the gardens and parks of this part of S. E. London (Charlton), and perhaps the bug may eventually come to be a familiar object upon it. — A. A. ALLEN.

ISLE OF CANNA, 1984: THE PEACOCK RETURNS. — For the first time since 21 September 1961 *Inachis io* L. has been seen here; this occurred during a minor heat wave between 29 April and 5 May, on 1 and 4 May. Another surprise was finding a *Nomophila noctuella* D. & S. on a heather-clad knoll about half a mile west of my house on 4 May. I cannot remember ever having seen *noctuella* here so early. The same unusual spell of weather produced several worn Small Quaker *Orthosia cruda* D. & S. in the mv trap, the first record for Canna. A Pine Beauty *Panolis flammea* D. & S. was in the trap on 29 April, the first since 3 June 1971.

Since 5 May there has been plenty of sunshine here, but with clear nights and northerly winds. The complete absence of gales in May has favoured the trees by leaving the young foliage unblasted. The Small Tortoiseshell butterfly has been unusually common; many hibernated specimens were released from buildings. — J. L. CAMPBELL, Isle of Canna, Hebrides, 5.vi.84.

EURRHYPARA PERLUCIDALIS HBN. IN S. W. ESSEX (VC18). —

I took a single specimen of this pyralid moth in my garden at East Ham on 15 July 1983. — C.W. PLANT, Passmore Edwards Museum, Stratford, London.

Current Literature

Le Multiguide Nature des Papillons d'Europe by I. Novak & F. Severa. French Edition by G. C. Luquet. 352 pp. 77 col. plates. Bordas, Paris, 1983.

This guide was originally published in Prague (in the German language), and naturally tends to concentrate on the lepidoptera of eastern Europe. A French edition has recently appeared and though the range of species covered is still the same, and necessarily limited by the origins and size of the book, the text has been adapted and largely re-written by Gerard Luquet. A section on classification has been contributed by Joel Minet and the nomenclature throughout has been brought up to date. New information is included on the biology and distribution of some species and an interesting addition is the official collecting restrictions in Switzerland, Belgium and France which are listed where appropriate. Some of these restrictions seem inexplicable from the point of view of rarity — the Swiss Canton of Vaud for example seems to ban the collecting of quite common species such as *Inachis io*. L and *Gonepteryx rhamni* L. This revised French version also has a glossary and convenient indices of vernacular and scientific names. The general quality of the book seems much superior to the English edition particularly with regard to the clarity of illustration. The main criticism is in its incompleteness, but it can be thoroughly recommended as a general guide. — C. J. L.

Entomologica Gallica, Bulletin d'Entomologistes Amateurs. Tome 1, Fascicule 1.

This new French quarterly periodical appeared in October 1983. According to the editorial, the magazine confines itself to France (insular and continental) but all insect orders are included. There is however a heavy preponderance of articles on lepidoptera (especially micros) in the first fascicule of 44 pages. Out of the 12 papers, seven are on micros, three on macros, one on Coleoptera and one on Neuroptera. There are also several interesting notes and observations, in the same style as those in our own journal. These short notes are encouraged as a special feature of the new magazine. The first issue is profusely illustrated with black and white photographs, drawings and maps. Congratulations are due to our colleagues, Patrice Leraut, Roland Robineau and Christian Gibeaux for the creation of this interesting new journal. Price per fascicule 30 francs. Yearly subscription 120 francs, obtainable from Christian Gibeaux, Residence La Chatelaine 77210 Avon. — C. J. L.

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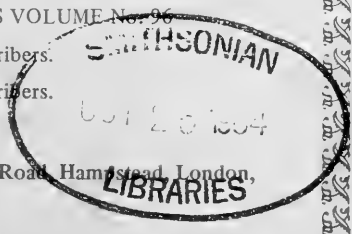
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REMINISCENCES OF AN ELDERLY ENTOMOLOGIST

R. P. DEMUTH *

I was born in 1907. My parents lived in Edgbaston, a leafy inner suburb of Birmingham. Almost from birth moths fascinated me. There was a story, presumably apocryphal, that I would lean out of my pram and place my finger firmly on the thorax of any pug or carpet foolish enough to be at rest on the adjoining close-boarded garden fence. I certainly did this as soon as I could walk and then placed the corpse in a matchbox. This was considered by my nurse to show sadistic tendencies and the demise of *Xanthorhoe fluctuata* resulted in no jam for tea.

As a dayboy in a preparatory school in Birmingham, I began to collect. That is to say I caught, killed and set insects and pinned them into an old birds egg cabinet my parents gave me. The local collecting ground was Edgbaston Park, a considerable private park and lake which we had permission to visit. All its surroundings were built up for miles around. The Chimney-Sweeper flew commonly over the damp parkland grass and I found a Coxcombe Prominent at rest on a twig, something I have never done since, but my great find was a pair of Poplar Hawks sitting on a reed. I had never seen anything so big and next day at school they caused a gratifying sensation. Further afield there was a disused railway cutting near Frankley. This was alive with Pearl Bordered Fritillaries and there were lots of Bee Hawks dashing around; since I never remember catching any I don't know if Broad or Narrow but I suspect the latter.

It is difficult to realise how common insects were 60 years ago. We went to the New Forest for our holidays. Church Place lies south west of Lyndhurst Road Station. It was a mixed wood with the rides bordered with bramble in full flower. Every bramble in the sun was smothered with Silver Washed Fritillaries and the Gatekeeper, hundreds of each species. The Large Tortoiseshell was also present in smaller numbers but I cannot remember if there was any elm. In all the Forest enclosures the White Admiral was abundant. On one of these holidays I first learnt to sugar. I must have read about it somewhere and persuaded my mother to give me the remains of a tin of treacle which I daubed on the exposed roots of a row of pines growing on a bank at the bottom of the garden where we were staying. After dark I crept out with my bicycle lamp. My treacle was covered with moths, ninety per cent Copper Underwings, jostling to get at the sweets. In contrast, in the year 1981, my wife and I put on four pounds of the finest Fowlers treacle and rum mix in one of the best enclosures and were rewarded with a grand total of four very common moths.

*Watercombe House, Waterlane, Oakridge, Stroud, Glos. GL6 7PN.

Other holidays were spent with my grandmother who had a little house near the cliff on the east side of Southbourne, out towards Hengistbury Head. Round the house were rough fields waiting development. In most years the Clouded Yellows would track backwards and forwards pursued by me. The sight of *helice* would double my speed!

The great collecting expedition from Southbourne was to go to Ballard Down between Swanage and Studland. If parental consent could be obtained, and my parents mildly disapproved of the time I spent (wasted) on collecting, I would take a tram to Bournemouth Square and run down to the pier from which there were two rival paddle steamer lines to Swanage ("White Funnel steamer leaving first, travel by White Funnel steamer!"). If the sun looked like going in, I would run all the way to Ballard Down. This chalk ridge from Corfe Castle to the sea was something quite outside my earlier collecting experience. The short grass was covered in flowers and the flowers were covered with butterflies. Chalkhill and Adonis Blues were particularly common, so were Marbled Whites and most of the Skippers. I had by then learnt to separate the Lulworth from the Small Skipper and both occurred in plenty. If any additional exercise was required, the pursuit of the Dark Green Fritillary or a male Oak Eggar provided it.

In 1921 I left my preparatory school and went to Charterhouse, a public school near Godalming in Surrey. Kettlewell and Lipscomb were my contemporaries, Cockayne had been there earlier so two-thirds of the R.C.K. were Old Carthusians. Ossy Latter and Cissy Rice were the masters in charge of biology which enshrined the lepidoptera and the latter organised expeditions by bicycle to good collecting spots. Some boys came because they were keen on natural history, others to avoid cricket; I was in both these categories, in fact my cricket was largely spent at long stop or long leg where I could look for caterpillars in the rough grass. Collecting was naturally limited to daylight. Only Kettlewell had the courage to go out by night. This he did in the autumn term by slipping away from the boys as they left their houses for the main school buildings to attend a concert or play and quietly rejoining them as they returned. The intervening two hours would be spent in scouring the Godalming street gas lamps and incidentally adding *plumigera* to the local list. The rest of us had to be satisfied with searching fences and tree trunks, beating for geometridae, pupae digging (lots of Lime Hawks round the trunks of elm trees) and getting caterpillars. The big ones were the popular ones. Broad-bordered Bee Hawks were easy as they were common on the honeysuckle growing over isolated bushes on the Surrey commons and gave themselves away when young by eating little holes down the midrib of the leaf. Poplar, Eyed and Privet Hawks, Emperors, Puss and Kittens, all living

(and mostly dying) in jam jars would be considered a fair assembly for the younger boy.

In 1924 I started keeping a diary and except for a few short gaps and a longer period before and during the war when I was in the Navy, I have kept one ever since. At first it was just a list of insects seen or caught but it soon became more chatty although the spelling was often appalling. By the end of 1925 I was using Latin names and "Silver Washed Frits" became *Dryas paphia*. What I have still to write is based on these diaries.

Here are some extracts from the year 1925 which give the flavour of collecting as noted by an enthusiastic and quite observant schoolboy. Observations in brackets are those of the old man of 1983.

May 14. I noticed a female Brimstone depositing. I collected several of her ova. When depositing two flies were crawling over her wings, but she did not disturb them.

June 4. I went to Newlands Corner (near Guildford). Duke of Burgundy Frits were extraordinarily common but in very bad condition.

June 16. (I give a list of caterpillars I was breeding).
 December Moth. Unsatisfactory, it is not feeding as it might (but it survived and when it emerged it was a Pale Oak Eggar).
 Broadbordered Bee Hawks. Eggs to third skin. Growing well.
 Vapourers. 1st skin. Eating well.
 Muslins. 1st and 2nd skins. Doing well.
 Poplar Hawks. Dead.

June 18. Went with Lipscombe to the Hogs Back after the Orange Tailed Clearwing. We found some larvae, thousands of old exit holes but no pupae. We met an entomologist, an oldish man, collecting for his son, a doctor. He told us where to find Small Blues, in a pit on the north side of the Hogs Back, Aldershot end.

June 23. Cut about many Wayfaring trees, finding many old tunnels but nothing fresh. I miss Kettlewell's advice and skill in this as in many other matters. (The brilliance of the man was showing in the boy!)

June 30. Went to the Hogs Back quarry (see June 18). Took 28 Small Blues. They were very common but few were undamaged as it is much too late.

August 1. (Holidays) For the first time in five years I went to Ballard Down, Swanage. The weather was dull with occasional sunshine and a very strong wind. I started to work the little nooks at the base of the downs. I took there 13 Lulworth Skippers, 3 Marble Whites and a few Brown Argus. The Lulworth Skippers were getting over and I took few good specimens. When the sun was in they sat on the grass and wild thyme and refused to fly. If disturbed they ran down into the roots of the grass where they were quite

impossible to see or dislodge. Throughout the whole day I only saw one male, why?

August 6. (On holiday with Kettlewell at Lyndhurst) We started off at eleven in pouring rain down Beechams Lane towards Stubby Copse. Bernard hurling his stick at the tree tops secured 8 Dotted Carpets. At the bottom of the Lane we started beating (list of common insects). At four o'clock luck suddenly changed. I got a full grown Alder Moth larva, Bernard another one skin smaller and I a Lobster half grown, all inside five minutes and all beaten from oak and all from separate trees. It is curious to note how *fagi* prefers the dying, moth-eaten boughs of oak instead of the healthy ones. (Rather unlikely. The female would have had to select the unhealthy branches the previous year when they might then have been healthy.)

Sep. 6 (Queens Bower, New Forest). I beat off oak a full grown *fagi*. The abundance of dead leaves that fall into the tray is a nuisance and *fagi* looked just like one of these and I would have tipped him out, as they don't get a grip at once, if he had not waved his legs at me protestingly.

Sep. 12 (Queens Bower, New Forest). I beat a lot of sallows and when I had finished the sallows I passed on to the birch and then emptied my tray of larvae again. The first thing I noticed was a Kitten in the middle of the tray lashing its tails. It is now supplied with birch and willow and the proof will be in the eating (*bicuspis* or *furcula*?)

Sept. 14. Kitten will only eat willow (bad luck!)

Oct. 3 (Back at Charterhouse). I went to Loxley Park with Lipscombe where we dug up 12 *tiliae* pupae. Three we unfortunately cut in half. Most came from elm. Little trees with trunks about 1 foot thick are much the more favoured.

Oct. 20. A young boy in my House gave me a *rubiginea* to set, which he had found under a tree. (To be asked by a junior boy to set such a rare and beautiful moth which I had never before seen must have made me madly jealous. To this day I have never seen *rubiginea* at rest in the daytime.)

At the end of each year my diary includes a review of the past twelve months. The high spots of 1925 were the adoption of black pins and the purchase of a Bignall beating tray. I list the pupae I have obtained and that I forced all of them. This was done on a shelf over a radiator in my cubicle and the reason was that I was too impatient to wait for their natural time of emergence and the result was I killed 60% of them.

By 1926 I was a senior boy and school rules were relaxed. One of these rules required the boy on half-holidays to be back in school for a roll call at 5 p.m. so the afternoon was divided into two collecting sessions, somewhere more distant first, say Hankley Common, and a quick rush round the Norney Rough fence after-

wards. This fence was between Peperharrow Park and the mixed wood of Norney Rough and was of vertical slats about six foot high to keep the deer in the park and gave me endless pleasure and a considerable variety of moths including my first *fagi* found at rest. Like most boys, the size of the moth had certain attractions and *roboraria* filled the bill as it was big, fairly common at Norney Rough and at Gatwick Wood nearby, had some variation and sat on tree trunks at a convenient height from the ground.

June 29. I spent an afternoon after *roboraria* and got 10 (5 ♀ 5 ♂), 8 in the Gatwick Woods and 2 at Norney Rough. I could have got more but I had no means of getting more home. They varied considerably in marking and colour from a light grey strongly marked with black to a dark grey with hardly any markings at all. All those at Gatwick were on oak — generally two to a tree but not necessarily male and female; those two from Norney Rough were on pine.

Another source of pleasure were the poplars which stood round Cutmill Ponds. These were medium sized trees with plenty of low projecting branches which could be reached by standing on the saddle of one's bicycle and must have provided me with scores of ova and larvae. For instance on June 9 I found larvae spun up between leaves which my diary described at length but without noting that they were two separate species, for on July 22nd *subtusa* emerged and the rest appeared in the spring as *Orthosia populeti*.

At the end of July 1926 I left school and though today it is unfashionable to admit that I enjoyed it, I did in fact do so. Charterhouse was a reasonably civilized place and my mania for catching moths was looked on as a pleasing eccentricity. Though I was no good at games I could run faster than anyone else and this was a quality that easily outweighed being a bughunter.

Immediately after I returned home I went to stay in the New Forest with Bernard Kettlewell whose parents were there on holiday. As soon as breakfast was over we would set out with our beating trays; as soon as supper was over we would set out with our tins of sugar.

July 29. In the morning we went again down Beechams Lane. I beat 2 more *trimacula*, 1 *coryli*, 2 *duplaris*. On bramble in a ride towards Stubby Copse I found 1 *alni* in its last skin. It was highly conspicuous curled up on the top of a leaf of a long bramble trailer. I saw 3 *valezina* which is common in the Forest this year. In the evening we went onto the moors and set up the moth trap and a sheet but we had a blank night. (What the moth trap consisted of I cannot remember.)

July 30. On an apple trunk in a cottage garden where we asked for water, Bernard found a newly-emerged ♀ *monacha* sitting on its pupa case. On the return Bernard found on a birch spray a very fine full fed *alni* larva not far from where I found mine. In the

evening we took the *monacha* ♀ to Beechams Lane and set up three lights there. Over 20 ♂ *monacha* came to light and they were arriving fast when we left; in addition we took 6 *jubata*, *lichenaria*, *duplaris* and many others. (About those lights: I am not certain what we used. At some time I started using a paraffin lamp but I also used an acetylene bicycle lamp with the top removed. This produced an effective blue/white light but the naked flame could incinerate the catch.)

July 31. In the evening we went to sugar in Hurst Hill (the traditional, No. 1 New Forest sugaring enclosure) where we found that objectionable man Strickland had sugared about 100 trees and left us six. We got nothing and I don't think he did either. (I don't suppose there was anything objectionable about Mr. Strickland, except that he had beaten us to it. In 1926 there were numerous collectors working in the New Forest including some resident professionals. There was a pub about half-a-mile out of Lyndhurst on the left of the Brockenhurst road where entomologists met in the evening to pick up information. Just behind the pub there was a ride with the most sugared oaks in England, sugared by those who had drunk well and could go no further!)

For the first three weeks of August I was staying with a school friend in Wicklow, the first of the great number of visits I have paid to Ireland, but I did little collecting. I saw a few *stellatarum* on the sea shore and I found one specimen on the handle of the guards van of the Dublin train where, as it was quite sleepy, it must have been for the journey.

I travelled considerable distances on my Sunbeam Oilbath bicycle (with back pedalling brake, so if you pushed the bike backwards the wheels locked solid) on the rough roads, sometimes up to 80 miles in a day. In the early twenties only the Southampton — Lyndhurst — Christchurch road was tarmac and all the remaining Forest roads were gravel. Not all this mileage would be by human effort. I would wait for an oncoming lorry or charabanc, accelerate and catch hold of any projecting part and be towed for miles. It sounds and probably was dangerous but the speed was not much more than fifteen miles an hour.

September 22. On such an expedition, to sketch and without a net, I stopped for a picnic at a wood in the very isolated area between Fordingbridge and Martin and found myself surrounded by *c-album*. Though most butterflies have become sadly more scarce, *c-album* has done the reverse and in 1926 was both scarce and local and here was I with them all round me but netless. They were mostly flying in a rough field alongside the wood and resting on scabious or overripe blackberries and with my hat I knocked down a few, returning on subsequent days to take a series. On one day Alan Druitt took me in his car. He was a Christchurch solicitor and had what seemed to me then a wonderful collection. He only

had one leg but was remarkably nimble, especially when *c-album* was in sight. As a reward for showing him the place he gave me a short series of Cornish *arion*. How times have changed!

October 6. Bernard (Kettlewell) took me to a place in West Bournemouth where *hispidus* (now *oditis*) was very common a few nights back, both sitting on marram grass and around the gas standards. There were quite a few out tonight sitting on the grasses and one had only just hatched (8 p.m.) as its wings were quite limp. On the front of a gas lamp we found an *exigua* and on a stem of marram grass Bernard found a *fluviata*. (The locality referred to was on sand dunes at Sandbanks facing in to Poole Harbour. I have taken *hispidus* at other localities but this was the only sand dune one I know and the interesting thing is that these *hispidus*, which I have still got, are conspicuously more marked with yellow and generally lighter in colour. I have made several return visits with the sand dunes reduced in area and no sign of *hispidus*. The *fluviata* (now *obstipata*) became the parent of a huge family which for several generations flourished in the sub-tropical greenhouse of Cambridge University Botanical Gardens.)

(To be continued)

ELAPHRUS ULIGINOSUS FABRICIUS (COL.: CARABIDAE) IN SUSSEX. — On 22 April 1984, I took a single *Elaphrus* at the edge of a small pond in Arundel Park. It was the only specimen of the genus that I found, and it was running on mud under herbage at the edge of an almost dry pond at the western edge of the park near the River Rother. It much resembled *E. cupreus* Duftschmid but on examination later proved to be the very local *E. uliginosus*. Moore (*Ent. Gazette*, 1957, 8: 171-172) records *E. uliginosus* from various southern counties excepting Sussex and Kent. This appears to be the first record of this species in Sussex. — RICHARD JONES, 29 Dean Road, Willesden Green, London NW2 5AB.

LARVAE OF CUCULLIA VERBASCI L. FEEDING ON BUDDLEIA DAVIDII ON THE ISLAND OF STEEP HOLM. — On 16 June 1984 I found six second to third instar larvae of *Cucullia verbasci* feeding on the leaves of a *Buddleia davidii* bush on the island of Steep Holm in the Bristol Channel. This represents an additional spot on the map (*Ent. Rec.* 96: 49-51). The normal food-plants of *C. verbasci* are members of the Scrophulariaceae, chiefly *Verbascum* spp. Since Steep Holm is well isolated from the mainland, this possibly represents a food-plant switch which has occurred independently to what is happening on mainland Britain. *C. verbasci* has previously been recorded on Steep Holm (*Steep Holm: a case history in the study of evolution* by the Kenneth Allsop Memorial Trust and John Fowles, 1978), but whether the island population is truly isolated or whether immigrants sometimes arrive from the mainland is not known. — DENIS F. OWEN, 66 Scraftoft Lane, Leicester.

THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1983

By R. F. BRETHERTON* and J. M. CHALMERS-HUNT**

(Concluded from page 159)

ANNEXE III

The Clouded Yellow (*Colias crocea* Fourc.) in 1983

The abundance of this butterfly attracted much public interest. We have received records of it from about 200 of those whose names appear in Annexe I; many of these have answered appeals for information which were published in "British Birds" and in "Country Life", to whose editors we are grateful for this help. Many others have contributed to the records supplied by some county recorders and by the courtesy of Mr. P. E. Newbery of R.S.P.B. from the wardens of nature reserves. Many of the individual reports are of occasional sightings on field expeditions and in gardens; these are helpful in showing distribution of the species and its abundance in various parts of the country. Counts on a daily basis throughout much of the season have been provided from the bird observatories at Portland, Dorset and Spurn Point, Yorkshire, and other wardens as well as by Mr. A. J. Dewick at Bradwell-on-Sea, Essex and by Mr. G. Gush in South Devon, mostly on the coast. These give a good basis for assessing the timing and size of the various immigrations, and they also contribute heavily to the numbers recorded in the counties concerned. To all these we offer our thanks. Records assembled in the Bulletin of the Amateur Entomologists' Society (vol. 43, no. 342) have also been used.

Over 10,000 individuals in the records received can be dated approximately to eight or seven day periods. The national totals of these are given below. Many more were represented by reports in general terms such as "seen daily" or "very common", which cannot be so treated. They have, however, been estimated and included in the vice county appraisals shown on the accompanying map.

It is probable that in all well over 13,000 individuals are covered by our records. In most of the past thirty years *C. crocea* has been almost a scarce species. 1969, with 550 recorded was the most recent year when it was at all common. In 1959 over 2,000 were reported, in 1949, 7,000, and in the great Clouded Yellow year, 1947, an estimated 30,000. These are the years which colour memories; by contrast, in 1963 there were only seven. There were probably more recorders in 1983 than in earlier years: its abundance surely exceeded that of 1949, but certainly did not approach the general profusion of 1947.

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** 1 Hardcourts Close, West Wickham, Kent, BR4 9LG.

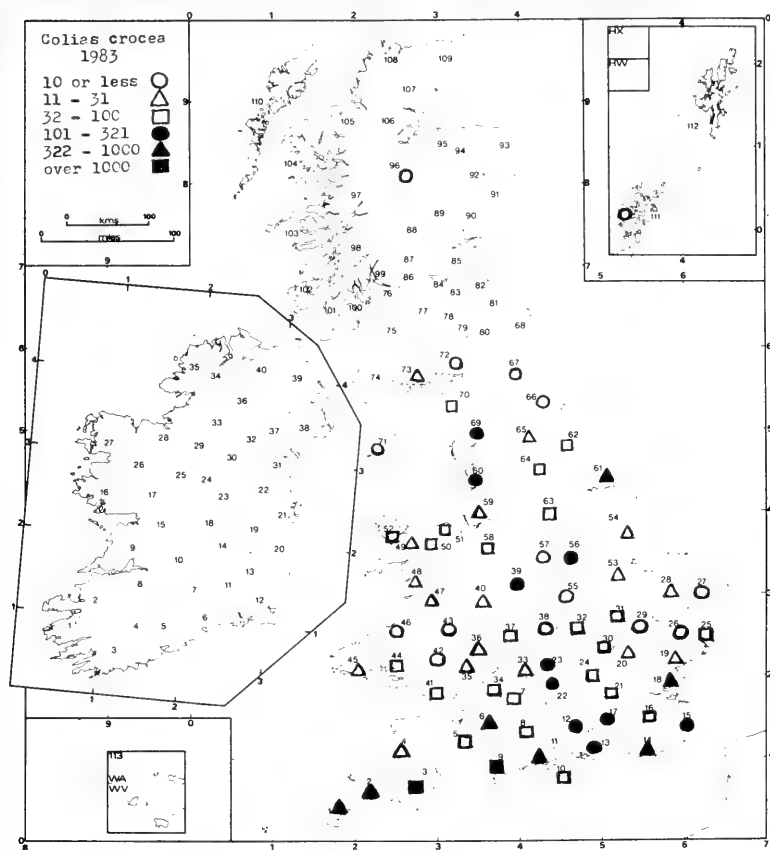


Fig. 1 Map indicating approximate estimated numbers of *Colias croceus* recorded from each vice county.

Weekly and monthly records of *C. croceus* in 1983: dateable records
(Great Britain only)

	I	II	III	IV	Month total
April			1		
June	26	49	65	21	161
July	21	29	86	1647	1783
August	2250	2170	1177	934	6531
September	163	157	321	668	1309
October	228	44	152	94	518
November	26	10	4	1	41
					<u>10343</u>

Note: from July III to September I, these figures relatively understate the actual abundance because of the greater prevalence then of generalised records which are not precisely dated.

The earlier immigrations were clearly defined. After an anomalous single record at Woodwalton Fen, Hunts., on 20 April, the first were seen at Ventnor, Isle of Wight, on 5 June, and on the next and following days about 70 were reported, nowhere in double figures, from South Devon to Kent and near the east coast from Essex to South Yorkshire, and even far inland in at least six counties, as far north as Staffordshire. A slightly larger but similarly scattered influx began about 15 June. Survivors of it accounted for most, if not all, of those reported in the first half of July, but a major influx began on 23 July, reached its height in the next few days, and continued or was repeated in the first week of August. Over 4,000 butterflies can be dated to this period; most of them were primary immigrants, though numbers may have already begun to be swollen by offspring of the early June arrivals. The centres of impact were clearly more westerly than in June: largest in Dorset, Devon and Cornwall, with for the first time records all up the west coast in early August as far as South West Scotland and in western inland counties such as Gloucestershire and Hereford. Thereafter a widespread mixture with probable or possible local emergencies makes it difficult to distinguish the new arrivals with confidence; but sudden peaks of numbers at monitoring stations near the coast suggest a further influx after the middle of August and another, which was probably the last, about 24 September. About then, however, there was some outward migration also. On 23 September over 30 *C. crocea* were seen flying out to sea, accompanied by many *V. atalanta*, from Hayling Island, South Hampshire and there was a similar occurrence next day at Budleigh Salterton, South Devon. Some other recorders of flight directions reported southward movement then and later in the autumn; but it does not seem that this was general.

All these immigrations came in on very wide fronts and continued for several days. In contrast to the massed and very localised arrivals of the great influxes of *C. cardui* in 1980, these *C. crocea* flew spread out in broad continuing streams such as those described throughout the afternoon of 4 August by an observer on a walk along the cliffs from Studland to Swanage, Dorset. He counted 83 individuals flying in from the south or south east, but said that these were a small fraction of the total. Sharp declines in migratory peaks monitored at Portland B. O. and elsewhere indicate that most arrivals on the coast soon moved elsewhere. In Dorset about 150 were seen next day feeding and ovipositing in one of the few remaining fields of lucerne some miles inland at Corfe Castle. At Ernsettle, on the outskirts of Plymouth, where the butterflies

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were flying in from the Tamar estuary, marking experiments by E. Griffiths in the lunch hour on many days in August showed that of 150 which were marked and released only six were recaptured on later days. Several other observers, however, noticed a strong tendency for the butterflies to move sideways, usually westwards, along the south coast, rather than flying directly inland. This, combined with an obvious need for early and prolonged stops for feeding and egg-laying, may explain the relatively small numbers seen far from the coasts. The 24 English and Welsh counties which have no coast-line provided only about 12% of all records. Dates of first sightings in inland counties suggest that June immigrants took several days to reach them after the earlier sightings near the sea. This is less marked in the south after the influx of late July, possibly because of warmer weather; but the butterflies seem to have been slow to work their way up the west coast, where few or none were reported beyond north Wales until well into the first and second weeks of August.

The extent of local breeding of *C. crocea* in 1983 is problematical. There are no accounts of the finding of the cryptic larvae or pupae in the wild, though several observers watched egg-laying in late July and in August, on clover, lucerne, bird's foot trefoil. T. W. Upton has recorded that from eggs laid in captivity in Yorkshire on 14 August the first larva pupated on 20 September and others by 5 October; the date of emergence of adults is not given. Frohawk (1934) gave as an example about 55 days from egg-laying to the emergence of an adult; G. E. L. Manley, however, (1947, *Entomologist* 80:290) said that from an *f. helice* caught on 3 August in Sussex, the laying of 300 eggs began on 7 August, the larvae grew quickly in the warmth of daily 8 hours sunshine, the first pupation taking place on 1 September, the first emergence on 13 September, and all but one of the others by 30 September — a range of 25 to 42 days. If, as is probable, the July warmth of 1983 approached that of August 1947 in south England, offspring of June arrivals could have contributed something to the numbers of adults in late July, and probably much throughout August. In the clear case of local breeding noticed at Lund Gravel Pits in Nottinghamshire, single adults were seen in late June, 20 presumably locally bred on 8 August, 152 in the following week, and 100 more by the end of the month, with three later on 22 September. More generally, in the first three weeks of September, when there is no evidence of fresh immigration, offspring of July immigrants probably accounted for most of the 670 then reported, though their numbers may have been reduced and emergence delayed by lower temperatures and bad weather. Many of the 500 noted in October and the 40 in November may have been either children of the July arrivals or grandchildren of those which came in June. For the year as a whole, however, although successful breeding was certainly numerous in the south

and occurred locally as far north as Yorkshire, it is unlikely to have contributed more than a minority to the total abundance.

Of the pale *C. crocea* f. *helice* about 140 were reported as such, and many others were described as "Pale Clouded Yellows". Of these a few were deliberately claimed as belonging to the true Pale Clouded Yellow (*C. hyale*), or to Berger's Clouded Yellow (*C. australis* Verity). Investigation of several of these for which detailed descriptions or photographs were made available showed that they were in fact referable to *C. crocea* f. *helice*. We have therefore listed in Appendix II as true Pale Clouded Yellows only six examples, all males, five of which were caught or closely examined by experienced recorders between 24 July and 2 August. These were believed to be *C. hyale* rather than *C. australis*, but in the absence of a retained voucher specimen certainty on this is not possible. Others may have been present, but it is clear that in 1983, unlike 1947 and 1949, *C. crocea* was not accompanied by any large influx of the other two species. One specimen, caught at St. John's, East Cornwall on 16 October and sent for examination by T. Aston proved to belong to the uncommon aberration of *C. crocea* f. *helice* in which its usual creamy white colour is modified to pale yellow; another example of this has been recorded from Spinfish, Isle of Wight on 20 October (SAK-J., *Ent. Gaz.* 35:66).

Several observers commented on very large predominances of males. One, who checked his records in both north and south England by captures, had 81 males but only three females, none of which were f. *helice*. In the marking and other counting experiments at Ernsettle, Plymouth already referred to, 111 out of 150 specimens marked were male. It is not clear, however, whether this predominance generally was due to disproportion of immigrants on arrival or to greater and more conspicuous activity by males than by females afterwards. As regards the proportion of females which belonged to f. *helice*, there were nine in the 39 marked, sample (23%): this is considerably higher than the percentages for it in three samples quoted by Ford (1945). Most recorders, however, who reported f. *helice* gave their counts of it against the total of *C. crocea* seen, without distinction of sex. Over the whole season at Ernsettle, Griffiths noted 29 f. *helice* (3.3%) in his total of over 900. The experience of some other observers of large numbers over much of the season varied considerably, giving for f. *helice* at Torpoint, East Cornwall 8%, 5% in both the Thurlstone area and at Aylesbeare Reserve in South Devon, but only 1.6% at Bradwell-on-Sea, Essex, where A. J. Dewick commented that, although the total number, 825, almost equalled that of 1949, the 13 *helice* noted seemed to be below average. But in view of the small numbers of f. *helice* and possible differences in the proportion of males, these percentages do not give much guide to the probable proportions of f. *helice* to those of normal females. F.

helice attracted much attention because its numbers were part of an unwonted general abundance, and because of its resemblance to the true Pale Clouded Yellows.

On the Continent *C. crocea* was seen on the cliffs of north Brittany on 30 July, and was reported to be unusually common in the Cevennes throughout August; but otherwise we have as yet no information about its movements. The June arrivals in England came in from the south or south east, with fairly good numbers of *V. atalanta* and *C. cardui*, and a few of at least ten species of the migratory moths (see Annexe II). They probably all came across France from the Mediterranean area. The much larger invasions by *C. crocea* in late July and early August were more westerly in their arrival points, and were accompanied by the first wave of Vestal moths (*R. sacraria*) as well as by some of the very long distance migrants. Both their direction and their composition suggest that they originated mainly in north Africa, whence migration may have been induced by prolonged and widespread droughts. The last large influx of *C. crocea* in late September came in with what appears to have been a huge invasion of *R. sacraria*. It is noteworthy that this species shared with *C. crocea* the distinction of having its best year in Britain since 1949 or 1947.

We must end with some words of warning. The coverage of this survey is uneven and far from complete, despite the help from so many recorders. In particular, although the general pattern of distribution shown may be broadly correct, we have almost no information about *C. crocea* in West Cornwall (including the Isles of Scilly) before August, although these are usually critical places for the arrival of immigrants. The west coast of Wales and parts of East Anglia, as well as many inland counties, are very thinly covered; and we have not felt able to appraise events in Ireland. Further records and comments which fill these gaps, and especially any which clearly indicate the extent of local breeding, will be very welcome.

THE FEEDING HABITS OF TWO SPECIES OF BURYING BEETLES: NECROPHORUS VESPILLOIDES HERBST AND N. HUMATOR GOEZE. — During an extensive survey of local woodland for the Shropshire Biological Records Centre, (Ludlow Museum), these two burying beetles were feeding in bait traps originally set up for Diptera.

The bait traps were made from a soft plastic drinks bottle with a 3" x 3" opening at the side, and a removable 3" x 1" glass collecting tube fitted in the neck. The trap was suspended 16' and 2' from the trunk by a greased wire. The bait was well rotted tomato and as many as 10 beetles were found a week from 1 trap. The beetles were often found almost immersed in the putrefying liquid. — D. J. DENMAN, B.Sc., Dip. H.E. BIOL., F.R.E.S.

SOME INTERESTING DIPTERA RECORDS FROM NORTH KENT IN 1982

L. CLEMONS*

In comparison with previous seasons, 1982 was exceptionally good in terms of the diversity of diptera encountered. The species listed below represent some of my more unusual captures during the year, principally from the Swale area of north Kent.

PSYCHODIDAE

Pericoma nubila (Meigen). Specimens were taken in four localities in Kent, although it is most probably widespread wherever there is densely shaded water. 23.iv.82 Oare TR 003624, 24.iv.82 Blean Wood TR 0860, 6.viii.82 Murston TQ 929651 – swept from the banks of a drainage ditch, 11.ix.82 Tonge Mill TQ 932635 – swept from alders. A collection from the latter site also contained the closely related *P. trivialis* Eaton.

Psychoda alternata Say. 9.iv.82 Milton Creek, Murston, TQ 912646. Vast numbers of pupae and emergent adults were present beneath driftwood near to a sewage outlet.

CHIRONOMIDAE

The following species were not recorded from Kent by Coe (1950) and since this family is not popular amongst dipterists they are probably new county records.

Chaetocladius piger (Goetghebuer). 14.iv.82 Murston, TQ 928646 – swept from *Juncus inflexus* L.

Polypedilum arundinetum (Goetghebuer). 19.iv.82 Murston, TQ 930651 swept from *Crataegus monogyna* Jacq.

Kiefferulus tendipediformis (Goetghebuer). 18.vii.82 Murston TQ 9264 swept in rough scrub.

Paratanytarsus inopertus (Walker). 19.iv.82 Murston TQ 930651 swept from ground flora in chestnut coppice.

MYCETOPHILIDAE

Sciophila nonnisilva Hutson (one male) and *Docosia fuscipes* (Roser) (three males) were swept from the banks of a drainage ditch in Blean Wood TR 085609 on 24.iv.82. Both are new to Kent.

STRATIOMYIDAE

Oxycera formosa Meigen. 10.vii.82 Tonge Mill, TQ 932635.

*76 Tonge Road, Sittingbourne, Kent ME10 3NR

A single female was swept from a small patch of *Carex* and *Typha* growing by a calcareous mill pond.

Oxycera trilineata (Fabricius). 11.vii.82 and 18.vii.82 Murston, TQ 927651. Several specimens were swept from a willow (*Salix atrocinerea* Brot.) beside a large water-filled clay pit. Large numbers of several diptera species e.g. *Seioptera vibrans* (Linne) *Poecilobothrus nobilitatus* (Linne) and *Morellia* spp. were also to be found, apparently lapping the copious honeydew exudations from the leaves.

Stratiomys longicornis (Scopoli). 10.vii.82 Tonge Lane TQ 932637 one male; 11.vii.82 Murston TQ 927651, one male and one female. All three specimens were observed feeding on the nectar of *Heracleum spondylium* L.

Stratiomys potamida (Meigen). 18.vii.82 Murston TQ 927648, one male on a *Heracleum umbel*.

EMPIDIDAE

Stilpon lunata (Haliday in Walker). 9.x.82 Nagden Marshes TR 026645. A single male of this minute fly was shaken from a grass tussock along the south facing base of a concrete wall.

Rhamphomyia subcinerascens Collin. 8.v.82 Murston TQ 929651. A male was swept from the flowers of *Anthriscus sylvestris* (L.) Hoffm. in a mature oak-chestnut coppice.

Rhamphomyia sulcata (Meigen) 14.iv.82 Bysing wood, near Faversham TQ 998618. A male of this species, which is very similar to the last, was swept at dusk from the earliest blossom of a hawthorn beside a gravel pit.

DOLICHOPODIDAE

Hercostomus plagiatus (Loew). 27.vi.82 Thornden Wood, near Whitstable TR 1463. A single female was taken by general sweeping. A scarce species which has also been taken at Abbey Wood in N. W. Kent.

Hydrophorus praecox (Lehmann). 18.ix.82 Milton Creek, Murston TQ 913646. A single specimen was swept from bare mud on the landward side of a flood prevention bank. Many more specimens of the similar *H. oceanus* (Macquart) were to be found on the exposed junction of the creek with the Swale ('The Lillies').

Chrysotus pulchellus Kowartz. 10.vii.82 Tonge Mill TQ 932635. A single female was taken in the same habitat as the *Oxycera formosa*. Apparently the first Kent record.

PLATYPEZIDAE

Callomyia dives Zetterstedt. 28.viii.82 Torry Hill, Milstead TQ 9156. Two males were taken by general sweeping.

SYRPHIDAE

Leucozona glauca (Linne). 28.viii.82 Timbold Hill, Frinsted TQ 908566. A single male was found feeding on a late umbel of *Heracleum sphondylium* L. Unfortunately the tube containing the insect was lost during the course of the afternoon so I have no voucher. This is apparently the first sighting in East Kent.

Eristalinus aeneus (Scopoli). This species was extremely abundant throughout the south Swale area in 1982. The first specimens were observed on willow catkins at Murston on 27.11.82. In late summer very many specimens could be found on the flowers of *Aster tripolium* L. along Milton Creek and the Swale.

PLATYSTOMATIDAE

Rivellia syngenesiae (Fabricius). This is by no means as common as our other platystomatid- *Platystoma seminationis* (Linne). Specimens were taken at two sites in Thornden Wood on 9.vi.82 (TR 1464) and 27.vi.82 (TR 1463).

TEPHRITIDAE

Myoleja caesia (Harris). 11.vii.82 Murston TQ 927651, one male; 18.vii.82 Murston TQ 922646, one female. There has been some confusion as to the host plant of this species. Seguy (1934) states that the larvae mine the leaves of *Lychnis diurna* Sibth. (= *dioica* (L.) Clairv.) whereas other authors refer to the fruits of *Sambucus nigra* L. and *Lonicera periclymenum* L. At first sight my specimens appeared to have been swept from *Salix atrocinerea* Brot. but on closer inspection it was noticed that in both instances the willows were growing in very close proximity to elders. I hope to be able to elucidate the situation at a later date.

Myopites frauenfeldi Schiner. 3.viii.82 Murston TQ 922653, 3.ix.82 Harty, Isle of Sheppey TR 037669, 5.ix.82 Murston TQ 925661, 18.ix.82 Milton Creek, Murston TQ 912646. This fly is specifically associated with *Inula crithmoides* L. and is likely to be found wherever the host grows. Many specimens were obtained by sweeping the *Inula* in sharp contrast to the situation with *M. blotii* Brebisson, the larvae of which develop in the flower heads of *Pulicaria dysenterica* (L.) Bernh. Although this plant is very abundant in the Swale area I have only encountered *M. blotii* on three

occasions in the past two years and in each case only single specimens were swept.

Chaetostomella onotrophes (loew). 14.viii.82 Darland Bank, Gillingham TQ 7965. This appears to be an under-recorded species in Kent although it has a wide range of common composite host plants eg. *Cirsium*, *Carduus*, *Arctium* etc.

SPHAEROCERIDAE

A small collection of sphaerocerids submitted for identification to Brian Pitkin at the BM(NH) revealed three species new to Kent.

Copromyza sordida Zetterstedt. 8.vi.82 Murston TQ 930651 one male swept from the banks of a drainage ditch in an old chestnut coppice; 3.vii.82 Murston TQ 930653 six males swept from horse dung.

Leptocera limosa (Fallen). 6.viii.82 Murston TQ 930651 in chestnut coppice, two males; 3.viii.82 Murston TQ 9265 at dusk in open marshland, one male.

Limosina plumosula Rondani. 16.vi.82 Murston TQ 914644 one female swept in rough scrub; 6.viii.82 Murston TQ 930651 one female swept in chestnut coppice; 3.ix.82 Murston TQ 930651 one male and one female swept in chestnut coppice.

All the specimens have been incorporated into the British Collection at the BM.

PALLOPTERIDAE

Palloptera scutellata Macquart. 27.iii.82 Murston TQ 928648 one female swept from *Juncus inflexus* L., 2.vii.82 Faggs Wood TQ 9834 one male; 27.x.82 Murston TQ 928648 four teneral females swept from *Juncus inflexus* L. Collin (1951) states 'The species may prove to be one which hibernates as an adult', and the dates of my female specimens would seem to support this. The larvae develop in the leaf bases of *Juncus* spp.

OPOMYZIDAE

Geomyza venusta (Meigen). 14.viii.82 Darland Bank, Gillingham TQ 7965. Three males and two females were obtained by sweeping the rank vegetation on this chalk slope. The site is similar to that at Downe NNR where Mr. A. A. Allen recorded the species in 1973. (Allen, 1977).

CANACEIDAE

Canace nasica Haliday. 3.viii.82 Milton Creek, Murston TQ

922653. A single specimen of this small fly was swept from bare mud at dusk (c. 19.30hrs).

CALLIPHORIDAE

Cynomya mortuorum (Linne). 31.vii.82 Conyer TQ 9665. A single male of this impressive species was taken from the leaves of *Salix atrocinerea* Brot.

Addendum

Since writing the above, I have taken a single male *Leucozona glaucia* from Berengrave Lane LNR, Rainham TQ 820670 (7.vii.83). It is interesting, but perhaps coincidental, that both my captures have been on the chalk. I have taken further specimens of *Myoleja caesio* from *Sambucus nigra*, but to date no material has been reared from the fruits of that species. *Geomyza venusta* was taken at Queen-down Warren, Hartlip TQ 828628 in May 1983.

Acknowledgements

In addition to Mr. B. R. Pitkin, I would like to acknowledge the assistance of Mr. P. J. Chandler for identifying the Mycetophilidae and Platypezidae, and Mr. J. H. Cole for identifying the *Hercostomus plagiatus* and *Chrysotus pulchellus*.

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THE HUMMING BIRD HAWK MOTH IN SCOTLAND. — While on Arran recently I found a specimen of this moth, apparently not long dead, in the Dining Hall of Arran Outdoor Centre, Shiskine. It was found on the 12th July 1984. — A. F. JOHNSTON, 17 The moors, Kidlington, Oxford OX5 2AH.

A SUGGESTED EXPLANATION WHY IN GENERAL FEMALE LEPIDOPTERA EMERGE LATER THAN THEIR MALE COUNTERPARTS

By M. HALSEY *

Breeders of moths will have noticed that in general females emerge somewhat later than do their male counterparts. A suggestion as to why this occurs is quite simple. A female will start 'calling' soon after emergence, and if she fails to pair within a comparatively short time, will cease 'calling' and begin to lay infertile eggs. In theory then, males should hatch first and be, as it were, waiting for the females to emerge. If this be true, then one or both of the following must also be true. Firstly, the individual which emerges as a female moth must on average have taken longer in its metamorphosis from egg to moth than the males, and/or secondly, the eggs which will produce females must be laid on average after those which will produce males.

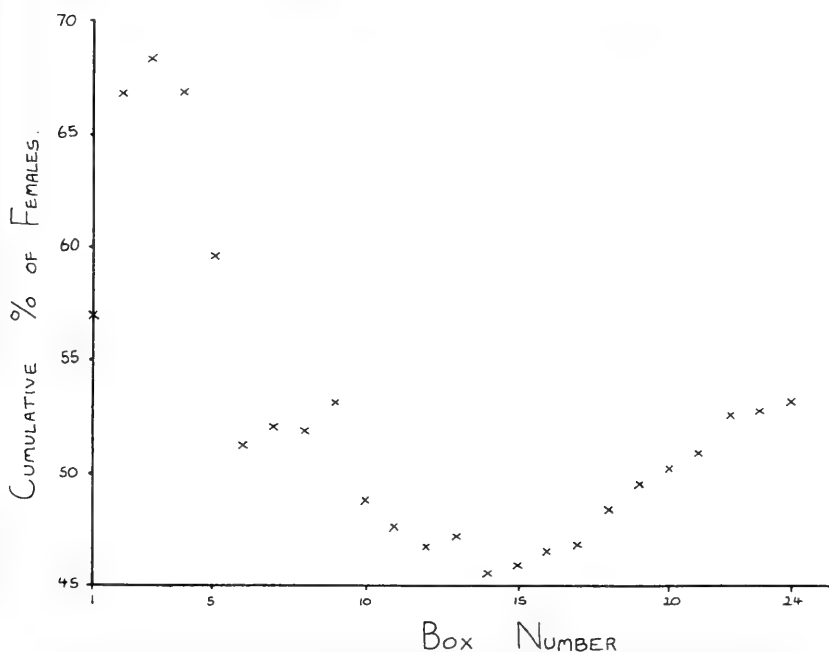


Fig 1 Graph showing 'Cumulative percentage' of females, plotted against the number of eggs laid at any time.

As an experiment to test the above, a freshly emerged female Early Thorn (*Selenia dentaria* F.) was selected and allowed to pair. The eggs she laid were collected in boxes of 10 in the chronological

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order in which they were laid. After 15 nights, 238 eggs had been collected in 24 boxes (i.e. box no. 1 contained the first 10 eggs laid, box no. 2 the next 10 and so on). Apart from a few losses, these were all reared and strict records kept of their development.

Results

The reason suggested for females emerging later than the males in that they take longer to complete their metamorphosis, was first examined. By considering only those boxes in which all 10 eggs were laid the same night (and the date of that night) the time taken to metamorphose by each one of the moths in that box was arrived at. Thus, in this particular case there were 17 such boxes, and the development time was calculated (allowing for a few losses) for just under 170 moths. The results of this analysis showed that on average, there was no significant difference between the matamorphosis time for females and that for males.

The second possibility, that 'female eggs' are laid after 'male eggs', was examined by looking at the total percentage of females, after each successive box had been taken into account. The graph shows this 'cumulative percentage' of females, plotted against the number of eggs laid at any time (e.g. after 130 eggs had been laid, 47% of the moths obtained were female). As can be seen from the graph, after box 14, the percentage of 'female eggs' laid, steadily increased until the parent moth died. In fact, of the last 100 eggs laid, 61% produced females.

From the foregoing, I should tentatively conclude that, towards the end of her life, a female moth will tend to lay a greater proportion of 'female eggs'.

These results seem interesting enough to warrant a repetition of the experiment, and if anyone is interested in helping with similar experiments, I would be glad to hear from them.

I am grateful to James Halsey and Louise D'Arcy for help received; and to the Lord Rootes Memorial Fund, for the receipt of a grant, under which the project was originally performed at the University of Warwick.

DISPERSAL FLIGHT OF THE MARSH CARPET: PERIZOMA SAGITTATA F. — In my garden stands a solitary plant of *Thalictrum flavum* L. On 23 July 1984, I was astounded and delighted to find thereon six eggs of the above. The nearest locality known to me for the plant lies some two miles distant. To be able to pinpoint such a tiny fragment of its foodplant within hundreds of acres of agricultural land and rural housing is a remarkable achievement. This is not an isolated occurrence as my friend, the late Vic Day had a similar experience in 1969, his garden being one mile from *sagittata*'s haunts in the local fen. — J. FENN, 4 Pearce's Close, Hockwold, Thetford, Norfolk IP26 4LU.

SOME SCOTTISH MICROLEPIDOPTERA IN 1983

By K. P. BLAND*

The undermentioned microlepidoptera worthy of special mention were noted in 1983.

Trifurculagriscella Wolff, 1957. A sixth British specimen (and the second Scottish specimen) of this elusive insect was found by Mr. I. C. Christie on 2.vii.1983 near Ben Hough, Isle of Coll (O. S. Grid ref. NM1758; V.c.103). It was taken flying amongst mixed herbs and proved to be a male. It was not obviously associated with any particular species of plant but *Lotus corniculatus* was abundant in the immediate vicinity.

Diplodoma herminata (Geoffroy, 1785). Previous published records of this psychid from Scotland all seem to have emanated from Perthshire and Sutherland so it was interesting to discover it in several places in southern Scotland. On 12.iv.1983 a case was found at Aiky Wood, Hoardweel, Berwickshire (O.S. Grid ref. NT7961; V.c.81) while on 26.vi.1983 a case was found on Inchcailloch Island on Loch Lomond, Stirlingshire (O.S. Grid ref. NS4090; V.c.86) and two days later several cases were found in Mugdock Wood, Dumbartonshire (O.S. Grid ref. NS5476; V.c.99). In all three localities the species was associated with the trunks of mature oak trees.

Phyllonorycter trifasciella (Haworth, 1828). The only previous published record of this species from Scotland seems to be from South Aberdeenshire (V.c.92). It is probably more widely distributed than this solitary record implies as the following finds suggests. Mines in *Lonicera* collected at Arniston Mains, Midlothian (O.S. Grid ref. NT3360; V.c.83) on 20.iii.1983 yielded imagines of this species on 28.iv. & 1.v.: Similar mines collected in Boltonmuir Wood, East Lothian (O.S. Grid ref. NT5168; V.c.82) on 12.iv.1983, emerged 6.v.1983: Mines in *Lonicera* collected on the Isle of Coll. (O.S. Grid ref. NM2360 & NM2662; V.c.103) on 2. & 10.viii.1983 are presumably also referable to this species.

Phyllonorycter quinqueguttella (Stainton, 1851). This gracilariid is also represented in Scotland through a single published record – this time from Easternness (V.c.96). It also occurs in the Inner Hebrides (V.c.103) and Kirkcudbrightshire (V.c.73). Mines in *Salix repens* collected on 2.viii.1983 at Loch a' Mhill Aird, Toraston, Isle of Coll (O.S. Grid ref. NM2360) yielded this species. A single imago emerged on 15.viii.1983 while three further imagines emerged (presumably prematurely due to being indoors) in xii.1983! Mines were also found, although not reared, in *Salix repens* by Dr. R. Knill-Jones at Southernness Dunes (O. S. Grid ref. NX9754) on 11. vii.1982.

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Glyphipterix schoenicolella Boyd, 1858. The Isle of Rhum appears to be the sole recorded outpost of this species in Scotland. It is thus nice to report that both Mr. I. C. Christie and myself have, in the last two years, independently found this species flying in abundance on the neighbouring Isle of Coll (O. S. Grid ref. NM2662; V.c.103).

Argyresthia sorbiella (Treitschke, 1833). This rather uncommon species was met with on three occasions in 1983 in Stirlingshire (V.c.86). Specimens were taken in the Old Manse Wood, Balmaha (O. S. Grid ref. NS4191) on 25. & 27.vi.1983 and further north at light at Ross Point (O. S. Grid ref. NS3795) on 28.vi.1983. It seems previously to have been taken in Scotland only in South Aberdeenshire and Perthshire.

Scrobipalpa murinella (Herrich-Schäffer, 1854). Recorded as Scottish from specimens taken on the Isle of Rhum (V.c.104), the larvae of this species, which mine the outer leaves of *Antennaria dioica*, have now been discovered on the nearby Isle of Coll (V.c.103). Feeding larvae were obtained from the Loch a' Mhill Aird area (O.S. Grid ref. NM2360) on 2.viii.1983.

Caryocolum vicinella (Douglas, 1851). The two previously published and widely separated Scottish records of this species from V.c.91 and V.c.106 suggest that it is a widespread but rare coastal species. In keeping with this, it also occurs at St. Abbs, Berwickshire (O.S. Grid ref. NT9167; V.c.81) from where larvae mining the terminal shoot-stems of *Silene maritima* on 12.iv.1983 yielded imagines on 24.vii.1983. Imagines have also been taken on Ailsa Craig, Ayrshire (O.S. Grid ref. NX0299; V.c.75) by Mr. I. C. Christie and Dr. R. Knill-Jones on 11.ix.1982.

Strophedra nitidana (Fabricius, 1794). A specimen of this small tortricid was taken while sunning itself on a leaf in the afternoon sunshine on the island of Inchcailloch in Loch Lomond, Stirlingshire (O. S. Grid ref. NS4090; V.c.86) on 26.vi.1983. This appears to be the only recent Scottish record for this species, although old records exist for Stirlingshire, Lanarkshire and Berwickshire.

Lobesia reliquana (Hübner, 1825). A specimen of this beautiful little moth was taken in an M.V. light-trap on the night of the 28/29.vi.1983 at Ross Point, Rowardennan, Stirlingshire (O.S. Grid ref. NS3795; V.c.86). This appears to be only the second time this species has been recorded in Scotland. It was first discovered by the late Mr. D. L. Coates at Aberfoyle (Christie & Christie, 1982). Meyrick (1928) gives 'Britain to Perth' for its distribution but the provenance of the Scottish records is unknown.

Pterophorus tridactyla (Linnaeus, 1758). A parasitized larva and an empty pupal case of this species was found by the author on Thyme at St. Abbs, Berwickshire (O.S. Grid ref. NT9167; V.c.81) on 12.iv.1983. On 19.vi.1983, Mr. I. C. Christie took an imago in Wigtonshire (V.c.74) about one mile north of Portpatrick (O.S.

Grid ref. NX0055). These records indicate that this species probably extends all round the Scottish coast and that the previous records from the Inner Hebrides (Rhum, Sanday & Coll) and Aberdeenshire are not isolated outposts.

Acknowledgements

I am grateful to Mr. I. C. Christie and Dr. R. Knill-Jones for allowing me to record species they have taken. I am also indebted to Dr. M. R. Shaw of the Royal Scottish Museum for allowing me to use the Museum's Scottish Insect Literature Survey.

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A SPRING GENERATION SCARCE CHOCOLATE-TIP: CLOSTERA ANACHORETA D. & S. AT DUNGENESS. – To the surprise and great delight of the assembled company, a single *Clostera anachoreta* was taken at mercury vapour light amongst *Salix* on the shingle at Dungeness, Kent, during the British Entomological and Natural History Society field meeting on 2nd June 1984. The insect was male, and entered the trap at approximately 22.00hrs. B.S.T. where it remained.

It is worth noting that no migrant species were recorded at any of the nine lights which were run there until just past midnight when rain began to fall, and it seems likely, therefore, that this individual had bred in the area. The species has been previously recorded at Dungeness, and larvae have in the past been obtained from *Salix* there and bred through, with adults being released later in the year. This attempt to bolster-up the Dungeness population appears to have been less than successful, as the species has been rarely seen since 1980, and it is pleasing, therefore, to record the continuing presence of such an uncommon moth. – C. W. PLANT, Passmore Edwards Museum, Romford Road, Stratford, London, E15 4LZ and P. A. SOKOLOFF, 4 Steep Close, Green Street Green, Orpington, Kent. [This appears to be only the second example of a spring brood adult *anachoreta* taken in the wild in Britain, the first having occurred at Bradwell-on-Sea, Essex on 9th May 1976 and recorded by A. J. Dewick (in *Ent. Rec.*, 91: 284). – J.M.C.-H.]

THE LARGE COPPER, *LYCAENA DISPAR DISPAR*
(HAWORTH) IN THE NORFOLK BROADS

By A. G. IRWIN*

In August 1980, a cabinet of Lepidoptera was included in an auction at Aylsham, Norfolk. I went to view the cabinet before the auction and was rewarded with the discovery of a pair of *Lycaena dispar* apparently from the Norfolk Broads. The ensuing bids for the cabinet went above my limit but I was able to contact the new owner who proved most helpful and allowed me to borrow the pair of *dispar* for closer examination.

The male, labelled "Ranworth Nfk 1860 WB", and female, labelled "Woodbastwick 1864 WB", both fall within the range of variation exhibited by 22 specimens of *L. dispar dispar* in the Norwich museum collection. They are certainly not of continental origin.

The cabinet was sold by Mr. T. L. Brayne of Fakenham, Norfolk and the specimens in it were collected by his mother, Iris G. Brayne (nee Bolding) and his great-uncle, William Bolding. Only seven specimens, apart from the *dispar*, have data labels and these give the locality, the initials "IGB" and a year between 1884 and 1918. The *dispar* labels are in the same format and hand as these labels. Clearly it was Iris Brayne who wrote and placed the labels on the *dispar*.

The distribution of *L. dispar dispar* before its extinction in the middle of the last century is summarised in Dennis (1977). The butterfly was centred on the fens of Cambridgeshire, Huntingdonshire and West Norfolk, but also occurred in Lincolnshire, Somerset and Monmouthshire, and there is a record from Benacre, East Suffolk. Tutt (1906) cites then dismisses the only published reference to *dispar* in the Norfolk Broads. Winter (1858) records: "This species has again appeared in the fens here [Ranworth]; I saw four yesterday but missed them all." Tutt's reason for doubting Winter's record seems to be that it appeared among a rash of sightings of *dispar* from Cumberland to Devon during the years 1856 to 1865 – when it was realised that the classic sites had gone.

I can see no reason to doubt the authenticity of Bolding's specimens. The detail of locality and date indicate that Iris Brayne transcribed rather than remembered the data when writing the new labels. If the specimens were from the Fens rather than the Broads, it is difficult to understand why they were not labelled so. Neither William Bolding nor anyone else stood to gain financially or otherwise from such deceit. I do not believe there is any question about their origin. The question that does arise is whether they represent a fugitive population that arrived from the Fens during the early

*Castle Museum, Norwich, Norfolk NR1 3JU.

nineteenth century or whether *dispar* was always present in the Broad.

If *dispar* had always been present, it is surprising that it did not come to the attention of any entomologist before 1858. However the Broad is not an easy area to work, even today, and if *dispar* had a restricted distribution then it may have been overlooked. The fact that the Cambridgeshire Fens were more accessible to most entomologists in Britain may well have contributed to its apparent absence from the Broad.

Although it is usually a sedentary species there is evidence that *dispar* can travel considerable distances (Heal, 1970) and it is possible that a population in the Broad could have become established in the first half of the nineteenth century. The introduction of *L. dispar batavus* (Oberthur) to Wheatfen Broad in 1949 (Ellis, 1965) was unsuccessful because of tidal flooding, but the butterflies did well for two seasons, and there seems to be no reason why temporary colonies of *L. dispar dispar* could not have become established in other areas. Whatever the status of *dispar* in the Broad may have been, one thing is certain — its extinction there did not result from over-collecting!

Acknowledgements

I thank M. B. Hincks of North Walsham for his generous loan of the specimens, and T. L. Brayne for valuable information about the collection.

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THE POPLAR KITTEN: *FURCULA BIFIDA* HUFNAGEL IN ANGLESEY. — A single specimen of this species was taken by Mr. B. Cooper at our Rothamsted light trap at Beaumaris (Site No. 438, O.S.Grid Ref. SM 612 795) on Anglesey on 17/18 July 1983. This, so far as I am aware, is the first of this species to be recorded for Anglesey. — A. M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Hertfordshire.

FLYING SPIDERS

By J. S. PHILLPOTTS *

"Up came a big spider
And sat down beside her
And frightened Miss Muffett away."

Traditional Nursery Rhyme

The question is how did the spider come to be there in the first place. They have a wide range of habitat from the cosy corner of a ceiling to remote rocks in the ocean and are found high in the atmosphere in conditions too cold for any insect which needs to use its wings.

I have always taken the dew laden gossamer silk threads which one often sees glistening on a field of long grass on an autumn morning to be draglines, not flying equipment, but I may be mistaken. I have not observed small spiders let out a line of silk to be caught by the breeze and cutting themselves free, with this strand to support them in flight. But I have observed a different procedure.

Lying in my hot bath one evening, I noticed a tiny spider on the hot tap. It lost its footing, fell a few inches, recovered itself and to my relief climbed back to the tap. But, horrors, it fell again and yet again till it had miraculously saved itself from death five or six times. Then, having apparently cut all its loops of web loose, and holding on to this little parachute, it floated up with the steam to the ceiling and safety!

This was the most dramatic display put on by a dare devil flying spider. The first one I saw take off climbed to the top of a sloping, dead grass stem on a beautiful autumn afternoon on Brimsdown at Brixton Deverill in Wiltshire, when a light south west breeze blew up the slope where we were picnicking, facing the sun. Again, this little spider seemed to lose its footing and kept falling, perhaps some four or five inches, and again freed itself and took off up the slope in the gentle wind.

The last one was a much bigger spider, of perhaps one centimetre leg span, which followed the same procedure on the outside of my north facing window pane when there was a light easterly breeze. It also flew away successfully.

In every case the spider seemed so accident prone that I quite failed to realise what it was about until too late to count the number of falls or estimate their length, but it does appear that this gives a more compact and practical parachute than the long trailing strand more often described. It would be interesting to know more about the species which practise the different procedures, the largest spider which can fly and the necessary wind speeds. They are equip-

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ped with trichobothria hairs to detect wind currents. Mine certainly were good judges of the right conditions, there were no failures or false starts. In each case the wind speed was between 1 and 3 on the Beaufort Scale and the temperature between 15°C and 25°C. One great advantage they have over insects is that they can parachute high into the atmosphere where the low temperature would immobilise an insect, but they survive in a torpid state carried passively by the upper air currents, and with their powers of withstanding prolonged starvation, can cross the widest oceans. In fact many spiders are common to different continents, some carried by man, others for palaeological reasons, but some borne on the winds, where they fall prey to insectivorous birds, but some reach a congenial habitat and multiply. Unlike birds and butterflies, however, they are too small to be noticed and recorded, though they must often be raining down unseen. Maybe some are carried on birds' bodies, if they are not picked off and eaten, but this must be uncommon.

Summary Small spiders from temperate regions can be carried, passively, high in the atmosphere where insects cannot fly and in this way be transported enormous distances.

It is suggested that a number of loops of silk may be more often employed to form a parachute than one long strand. In the former case the weight of the spider's body is utilised to draw it out.

I should like to thank Mr. Paul Hillyard of the Natural History Museum, Cromwell Road, London, for his assistance in preparing this paper.

THREE RARE MIGRANT SPECIES IN 1984 AT HAM STREET, KENT, INCLUDING SEMIOTHISA SIGNARIA HBN. — The evening of the 31st July 1984, in Longrope, Orlestone Forest, Ham Street, began rather cool and clear, but as the night wore on the temperature rose a little and by 1 a.m. (1st August), as well as many local specialities I had taken at m.v. light slightly worn single specimens of *Semiothisa signaria* Hbn. (female) and *Trisateles emortualis* D. & S. (male). My companion, Julian Abbott was rewarded with a splendid fresh *Enargia paleacea* Esp.

At the time of writing, 10 days later, the *S. signaria* lives on, being frequently supplied with honey and water and is ovipositing freely. Already 22 larvae have hatched and these have taken readily to Douglas Fir and Larch. With luck I shall issue further notes on their development in due course. — J. FENN, 4 Pearce's Close, Hockwold, Thetford, Norfolk IP26 4LU. [This is only the second record of occurrence in Britain of *S. signaria*, the first being that of a male taken in Essex on 20th June 1970, by R. Tomlinson (cf. *Ent. Rec.*, 86: 195, plt. XVI, fig. 3). — J.M.C.-H.]

By C. I. RUTHERFORD *

As predicted at the end of the article on the Butterflies of Crete in 1979 by Cooper and Rutherford, the attractions of this delightful island proved irresistible and I returned in 1982 and again in 1983 but before detailing the results of these visits I must refer back to the earlier article. (*Ent. Rec.* 92: 239-242).

This was written before the fourth edition of Higgins and Riley had appeared and this makes a number of changes both to the nomenclature and to the recorded distribution of some species. I have also had some most helpful correspondence with Mr. Russell Bretherton clarifying some of the anomalies and reducing the number of species *known* to occur in Crete to 39 with two more "possibles"; this of course means that Michael Cooper and I had done better than we thought (percentage wise) in 1979.

Mr. Bretherton was also kind enough to point out that I had misunderstood Johnson's record of *Turanana vicrama* Moore; as the only *Turanana* species shown in Higgins and Riley's first edition was *T. panagea* Rebel I had assumed this to be a synonym but I now understand that what was known as *T. vicrama* is now regarded as a subspecies of *P. baton* and is known as *Pseudophilotedes baton schiffermuelleri* Hemming which is obviously the insect I had simply recorded as *P. baton*.

This eliminates *T. panagea* from the list of 44 species; Mr. Bretherton also suggests that neither *Aglais urticae* nor *Agrodiatus* (formerly *Plebicula*) *thersites* should be included and these two species are indeed not shown for Crete in Higgins and Riley's fourth edition. Mr. Bretherton also regarded the records for *Pyrgus armoricanus* and *Gegenes nostrodamus* as needing confirmation before inclusion in the island list (but see later).

In 1982 we arrived in Crete on 19th May and left on 2nd June so that we were just two weeks later than on our first visit, on this occasion, and again in 1983, we were based at Hersonnissou some 20 kms further East than on the first stay. Not surprisingly the species seen and caught were very similar to those of 1979 but we did explore some new ground.

First, though, we revisited the Lasithi plateau where *Zerynthia* (*Allanacstria*) *cerisyi cretica* Rebel was quite plentiful on 22nd May and *Iphiclides podalirius* L. was seen on the approach road near the rim, at this point one or two small whites were pursued without success as it seemed a likely site for *Pieris ergane* Geyer; at lower levels *P. rapae* L. was so common that it was impossible to look for something so similar.

On the 24th we drove up to Anogia and then on up towards

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Mt. Ida; the road has obviously been improved since Bretherton's visit as we drove about seven kilometers without difficulty (though with some care!) and this brought us on to the higher plateau, we could have gone further but it was obviously too early for *Kretania psylorita* Freyer and there was hardly anything to be seen on the wing. On the way down from Anogia we stopped at one or two promising spots by the roadside and took among other things *Polygonia egea* Cramer, *Vanessa cardui* L. and *A. cerisyi cretica*; *G. cleopatra* was seen but escaped among bushes on the steep hillside.

We made an early start on the 27th in order to visit the Omalos plateau which we reached by mid-morning and quite near the head of the famous Samaria Gorge I took a solitary *Aricia agestis* D. & S. flying on the hillside, *P. icarus* males were on the wing and I was quite surprised to find that I had at last taken *A. agestis* but I did not find any more. As we reached the plateau on the way up we noticed a parked car and some 200 meters from the road two people beating a large bush into an inverted umbrella! We resolved to make contact on the way back but although the car was still there there was no sign of the entomologists and a few minutes later the sun was obscured by heavy cloud and torrential rain began to fall; no doubt the umbrella was now being used for the purpose for which it was originally designed but we decided to start the long descent while we could still see the road which in parts was more like a river.

The results of the 1982 visit can be summarised by comparing it with 1979:

(a) One species, *A. agestis*, not seen by M. W. C. or myself in 1979 was taken and on a site not visited in 1979.

(b) I took three species that I had almost certainly seen but not taken in May 1979, namely *P. machaon*, *V. cardui* and *P. egea*. (I am assuming that the Vanessid that I saw in Kritsa in 1979 must have been this species now that I know the *A. urticae* does not occur on the Island.) M. W. C. took all these three in July/August 1979.

(c) I did not see two species captured in 1979, *Pontia daplidice* L. and *Lampides boeticus* L. nor did I see the two others seen but not taken in 1979, *Pieris brassicae* L. and *Lycaena phlaeas* L.

(d) All the other species recorded in May 1979 were seen again, many of them in considerably greater numbers, particularly *G. cleopatra* although I again failed to capture a specimen. As in 1979 only a single male *Hipparchia cretica* Rebel was taken and no others seen, this was recorded as *H. semele* L. but has since been accorded specific rank.

In 1983 we stayed at the same hotel as in 1982 but this time we went in October, a period not covered by any of the recorded visits; presumably it is a period that has been avoided on the assumption that the hot dry summer would not have been conducive to

much insect activity in the early autumn. This has certainly been my own assumption until I visited the Algarve in October 1981 (*Ent. Rec.* 94: 76) and was surprised to see quite a lot of butterflies including some of the species known to occur in Crete but not seen by any of us on recent visits.

We were not disappointed, the countryside was certainly very dried up but the hotel gardens were well watered and many butterflies were seen therein, including *Gonepteryx cleopatra* L. feeding on geranium flowers and much more approachable than it had been in the spring. In the first five days about ten species were recorded in and around the hotel grounds including both *Papilio machaon* L. and *Iphiclidides podalirius* L.

On 3rd October we hired a small car for four days and explored a nice range of localities but without making any very long journeys, we did not really get into western Crete on this occasion. On the way up to Lasithi we stopped near Kera to admire the view and a large dark butterfly alighted nearby and proved to be a worn female *Pandoriana pandora* D. & S. Many "whites" were inspected on the Lasithi plateau but all appeared to be *Pieris rapae* L. On the next day we reached the South Coast at Ierapetra and returned through the hills via Kastelli seeing an occasional Grayling but not catching one until we visited the gorge leading towards Anogia a couple of days later when a single *Polygonia egea* Cramer and several *Hipparchia cretica* Rebel females were taken, it was significant that all *Maniola jurtina* L. seen were females too.

On the 5th I went along to Neapolis to try to find the area where D. Hockin had taken *Gegenes pumilio* Hoffman. in 1973. After several unpromising stops I found an area along the Old Road quite near Neapolis where quite a lot were flying amongst the olives and where there was a well watered vegetable patch, a dried up river course and a patch of heathy hillside. The first significant catch was a small "blue" which turned out to be a fresh female *Syntarucus pirithous* L., the only one positively identified throughout, most such small "blues" turned out to be the small local race of *Polyommatus icarus* Rott. even when flying around bushes. While searching for another *S. pirithous* I netted a skipper and boxed it without really looking at it assuming it to be *Carcharodus alceae* Esp. which was generally common in its small autumnal form; however on later inspection this proved to be *Pyrgus armoricanus* Ober. in fair condition. Naturally enough we were back on the same site next day but among large numbers of *P. icarus* and *C. alceae* the only thing of interest was a single example of *Aricia agestis* D. & S.; *Celastrina argiolus* L. and *Vanessa atalanta* L. were also taken here.

Without the car the last few days were spent in the environs of the hotel and of the village of Hersonnissou where a rather promising piece of rough ground was visited two or three times

and provided the first *Lycaena phlaeas* L. that I had seen since the early days of my first visit but the best catch here was a fine example of *Gegenes pumilio* Hoffman. on the 8th, two more were taken and a fourth missed in the next two days in this area which also yielded *Cynthia cardui* L., *Colias crocea* Geoff., *Pontia daplidice* L., *Lasiommata megera* L. and *Pararge aegeria* L. as well as a single *Hipparchia cretica* and several of the other species already mentioned.

I had thus recorded 22 species, exactly the same number as in my May 1979 visit though of course seven of them were not included in the first list. This time however I had the satisfaction of taking *S. pirithous* which was not recorded by any of the previously reported expeditions, but for which the Algarve had whetted my appetite. Probably of even more significance were the "skippers": *Pyrgus armoricanus* definitely confirmed (the genitalia have been examined by Dr. M. Hull) and so bringing the number of species known from the island back to 40; and *Gegenes pumilio* found to be not uncommon, this together with D. Hockin's record suggests the possibility that the earlier record of *Gegenes nostrodamus* Fab. may have been due to misidentification of *G. pumilio* which in Crete seems quite large and Mr. Bretherton tells me that these species are easily confused.

Before concluding I must refer back to my failure to visit Western Crete in order to pass on briefly the observations of Derek and Jeremy Steeden of the Lancashire and Cheshire Entomological Society who spent two weeks at Maleme in Western Crete from 21st April to 4th May 1982. During this time they covered a lot of ground, obviously working much harder than I did, they found many attractive habitats but were still only able to record thirteen species, some of them only in ones and twos; the best were *Zerinthia cerisyi cretica* Rebel and *Pseudophilotedes baton schiffmuelleri* Hemming, while only one was not among the species I saw in May 1982 and that was *Vanessa atalanta* L. It seems that late April is rather too early to get a representative sample of the butterflies of this island, Johnson's experience in 1964 (*Ent. Rec.* 76: 187) would seem to bear this out.

It is interesting to note in conclusion, and as a guide to others planning a visit to Crete, that the only species among the 40 listed for the island which have not been recorded by any of the recently reported British visits are *Issoria lathonia* L. and *Zizeeria knysna* Trimen; the former always seems to be elusive, it is listed for the Canary Islands but in six visits I have never seen it there. *Z. knysna* on the other hand is easily found in the Canaries and I am familiar with its habits there and have visited apparently suitable habitats for it in Crete without seeing any sign of it.

REARING THE SLENDER BURNISHED BRASS:
DIACHRYSA ORICHALCEA (FABRICIUS)

By DAVID BROWN and ANDREW GARDNER*

In an area of overgrown waste ground on the floodplain of the river Avon at Stratford-on-Avon, Warwickshire, a female of this rare migrant noctuid was attracted to the Heath trap belonging to Mr. Ray Bliss, at 11.30 p.m. on the 30th of July 1983. The specimen, which was in very good condition when captured, began to lay almost immediately on the sides of a pill box. Later, on being transferred to a larger container, it continued to lay very freely on various surfaces, including glass, and altogether 180 eggs were deposited.

The Egg. Is creamy-yellow, of a distinctly glossy appearance, hemispherical in shape and without any outstanding surface features. Generally laid singly, the eggs were also deposited in a few groups of up to eight in number. They were kept at room temperature (60-65°F.), and in 6 days began to darken immediately prior to hatching.

The Larva. The newly hatched larva measures about 2mm. in length, is pale green and slightly transparent. Initially given garden Coreopsis, we later tried them with more readily available food sources such as dock, dandelion and potato leaves, all of which were accepted.

Three days after hatching, they were transferred to five plastic boxes, at which time they measured 6-7 mm. in length, with dark spiracular lines tapered dorsally to a blackish head. On the fourth day we decided to keep half at room temperature and the other half at 90°F. The effect of this treatment on the latter batch resulted in an immediate and marked change in the rate of growth, with after only one day an increase in length to 11-13 mm., while those at room temperature had reached only 8-9 mm. The former were now darker green, with a clearly defined yellowish-white lateral line running the length of the body, and above this a faint black spot on each segment; a series of white lines along the arch of the back, of varying thickness and clarity; body sprinkled with white hairs; head, claspers and legs green.

Further foodplants were introduced, including Woody Nightshade and tomato leaves, all of which were eaten, but potato seemed the most favoured, though at the higher temperature, there was evidence that dock caused diarrhoea. After seven days, those at 90°F. measured about 18-20 mm. in length, while those at room temperature were considerably smaller though apparently still in good health. Those 'forced' at the higher temperature reached full growth after only 14 days and with no losses.

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The final instar larvae measured 34-38 mm. long, and were of a light green hue, the yellow lateral line now very prominent; the white dorsal lines somewhat wavy and of varying widths; the black spots one on each segment just above the yellow line, and below the latter a series of relatively faint yellow spots and markings; on the hind segment a large conspicuous oval mark; the white hairs now quite prominent.

The larvae cocooned either by spinning together two leaves, or by making a flimsy silken tent amongst the paper tissue lining the container, the whole process taking only 2-3 hours. Despite being fairly overcrowded when full grown, the larvae showed no inclination to cannibalism. After about two weeks, some of those kept at room temperature began to die; the survivors were accordingly transferred to hotter conditions (90°F), but too late for most, and only 15 of this batch pupated successfully.

The Pupa. Dark mahogany brown, slender in shape and 20mm. long with wing cases $\frac{2}{3}$ the pupal length. The pupae were kept at 85-90°F. and sprayed with water daily. The adults emerged after only one week, and were well formed. There were very few casualties.

About 15 pairs retained alive for further breeding were fed on diluted honey and sugar. These were kept at varying temperatures, but only one definite pairing was noted and all the resulting eggs were infertile.

THE SILKY WAINSCOT: *CHILODES MARITIMUS* (TAUSCHER) IN NORTH LANCASHIRE, SD 47. — During 1983 while trapping at a local Nature Reserve to provide a list for the site, I took two specimens of *Chilodes maritimus* ab. *bipunctata* (Haworth), in a Robinson trap. It was July 12th-13th and the night was such that the large numbers caught made counting all of each species impractical: there were about 70 species present. In the same catch were six *Mythimna straminea* Treits., also noteworthy for N. Lancashire.

The provisional distribution map does not show *C. maritimus* anywhere in the area and it seems worth reporting it as apparently the most northerly record. — ERNEST E. EMMETT, Beck House, Hornby Road, Caton, Lancaster, LA2 9QR.

COMMOPHILA AENEANA HBN. (LEP.: COCHYLIDAE) IN BUCKS. — On 15.vi.84 I found this moth on the outskirts of a wood on the extreme western edge of the county. I thought this would be the first record for Bucks, but Mr. Martin Albertini tells me that he caught a specimen of the moth near High Wycombe on 26.vi.81. My example was taken in one of the reserves of the Berks., Bucks. & Oxon. Naturalists' Trust and I am most grateful for BBONT's permission to collect in the area. — LT. COL. W. A. C. CARTER, Briarfields, 4 Sandels Way, Beaconsfield, Bucks.

JOHN ABBOT'S LONDON YEARS

PART III

By RONALD S. WILKINSON*

IV. Abbot's Linnaean knowledge

Not surprisingly, a number of the exotic specimens which Abbot drew with increasing frequency during his final years in England were yet to be scientifically described. (Some of his subjects escaped initial description for a considerable length of time; more striking examples are C86, the skipper *Cabares potrillo* (Lucas), 1857, and C85, the pierid *Eurema adamsi* Lathy, 1898.)⁶² Many such insects unknown to science were entering the London cabinets during the 1770s, and in Virginia and Georgia Abbot would encounter a paradise of undescribed fauna. Had he been more inclined toward taxonomy, his reputation might have been considerably enhanced, but he thought of himself as an observer and recorder, a field naturalist rather than a nomenclator. So far as is known, Abbot never attempted to publish a scientific description, even though many of the American animals which he studied and painted merited such treatment. He consistently deferred to the greater taxonomic knowledge of others, as when he sent his drawings and notes to James Edward Smith for publication with the explanation that he had not attempted to describe the insects "in any scientific manner, leaving that for you[r] superior Abilities."⁶³

But Abbot was hardly unaware of taxonomic procedures. He had used Linnaean trivial names when annotating drawings of insects made in 1767, 1771 and 1772 (C12, 17, 93, 94, 97), and late in 1772 he applied the system of Linnaeus to a considerable body of his entomological work. He selected forty-two of his water-colour compositions, containing two hundred and thirty-five insect drawings, for arrangement in Linnaean order, perhaps with eventual publication in mind. The group is that now at Harvard (H1-42), the earliest of many sets which Abbot would embellish with explanatory notes and title-pages.⁶⁴ Abbot's friends could easily have coached him while he was ordering his drawings and preparing a manuscript 'text.' There were no more avid disciples of Linnaeus in London than Drury and his fellow naturalists, especially Solander, whose reputation as the local arbiter of his master's system had helped to secure his pre-*Endeavour* position at the British Museum.⁶⁵ Drury used Linnaean nomenclature in the *Illustrations*, praising its originator: "This author is the principal one I have quoted among the descriptive writers: his great judgment in this study, the plain method he has laid down for the classing of insects, together with the excellency of his generical characters, are what must endear him

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to every professor of this study.”⁶⁶ A copy of the first volume of the *Illustrations* had been sent to Linnaeus with a covering letter in which Drury styled the Swede “ye greatest *Master* of natural history now existing” and congratulated him “on the effects w[hi]ch your *Systema* has had among ye followers of natl. hist. here in London.”⁶⁷ Abbot might have borrowed Drury’s copy of the *Systema Naturae* (it was the twelfth edition, 1766-1768),⁶⁸ but he chose instead to consult one of a number of works in English which had been specifically written to apply Linnaean classification and nomenclature to the British flora and fauna.⁶⁹

Abbot used the first volume (1769) of John Berkenhout’s *Outlines of the Natural History of Great Britain and Ireland*, which included an extensive section on insects and their relatives. Although the dependence was not mentioned, it is easily traced. First, the compositions were arranged and numbered consecutively to conform to a progression of Linnaean orders, from Coleoptera to Aptera. (In some cases this was not possible, as several sheets included species of various orders.) Abbot then wrote the manuscript, which included a brief account of each species, incorporating data from his entomological journal. Abbot’s comments about capture, metamorphosis and behaviour often reflected the study of a species over a period of time, and did not all necessarily refer to the precise individuals depicted in the drawings. Nearly all of the Linnaean content of the manuscript was taken from Berkenhout. Whenever Abbot gave characters of orders or genera, these were copied directly, or nearly so, from his source. He identified as many of his insects as he could from Berkenhout’s text, and almost all of his binomials were found in the book. One of the exceptions, his “*Scarabeus nitidus*” (H6), a beetle from Maryland which of course he could not locate in a volume concerning the British fauna, was surely identified from his copy of Drury’s *Illustrations*. Varying amounts of Berkenhout’s commentaries were incorporated in Abbot’s manuscript. Such information as common name and physical description was often copied entirely or partially, or paraphrased. But Abbot’s use of Berkenhout was not entirely slavish. Whenever the author’s descriptions did not entirely fit the specimens which Abbot had examined and drawn, they were amended, and of course the observations on collecting, rearing and habits were Abbot’s own.⁷⁰ Occasionally he mentioned the works of Georg Hoefnagel, Thomas Moffet, Johann Goedart, Martin Lister, Maria Sybilla Merian, and John Ray in his manuscript, but in all cases except his referral of *Argynnis paphia* (L.) to Lister’s Latin edition of Goedart (H23), these citations of pre-Linnaean authors were taken *verbatim* from accounts of the same insects in his copy of Albin, which was also mentioned.⁷¹ Despite Abbot’s considerable, unacknowledged dependence on other sources, the finished product was attractive, and was hardly an uncreditable venture.

Considering the ample manuscript evidence, it is surprising that two previous writers have been misled about Abbot's knowledge of Linnaeus' contributions. The admirable Charles Cowan has suggested that Abbot "made friends with several prominent naturalists in London (though he never heard of Linnaeus, nor of any form of classification, until he was well over 50.)"⁷² Vivian Rogers concluded that Abbot "lacked instruction in scientific thought. He grew up unaware of Carolus Linnaeus's system of consistent binomial nomenclature for species of plants and animals which was first advanced in 1753. It was not until a Savannah friend, Dr. Augustus G. Oemler, demonstrated it to him some time after 1805 that he learned of it."⁷³ Even if Cowan and Rogers believed that Abbot could have remained completely insulated from Linnaean thought despite his years in London and his friendship with proponents of the new system, until all was made plain when he was past fifty, an examination of the eighteenth-century drawings and notes would have revealed his awareness of Linnaeus' binomial nomenclature when he was very young, and his use of the zoological classification as early as 1772. Both writers appear to have depended on a 1914 paper by Robert P. Dow, who claimed that Abbot "never heard of the Linnean system until after 1805." Dow's source was an 1834 letter to Thaddeus W. Harris in which Augustus G. Oemler stated that Abbot had been "drawing plants since his boyhood and never knew anything of Linneus' Classification till I demonstrated it to him and created his astonishment. After this, he never committed again the error to paint differend numbers of stamens on the same flower."⁷⁴ Obviously Oemler, a pharmacist who was also an accomplished botanist, was writing about Abbot's supposed ignorance of Linnaeus' "sexual system," his classification of plants based on their genital organs,⁷⁵ and was not referring to the zoological classification or principles of binomial nomenclature. Oemler's claim was insufficiently interpreted by Dow, and subsequent authors piled Ossa upon Pelion.

But Oemler's letter does pose a problem. If Abbot could hardly have avoided Linnaean influences because of his London experience, how could he have been ignorant of such a well-known concept as the sexual system until Oemler told him about it, thirty years later in distant Georgia? Linnaeus' botanical classification, incorporated in the first edition of the *Systema Naturae* (1735) and widely publicized afterwards, was well established in Britain when Abbot was learning the rudiments of natural history.⁷⁶ Admittedly Abbot had no absolute need of the new systematic botany when rearing his insects and depicting their foodplants; after all, generations of entomologists had been able to feed larvae their proper pabulum without the benefit of Linnaean works, just as botanical illustrators had managed to survive before the popularity of the sexual system. It does, however, seem extraordinary that Abbot could have avoided

encountering such elementary knowledge for so long. Not only did his naturalist friends know the botanical classification, but Abbot quickly became one of the more effective students of the life histories of insects during a period when so many of the recent botanical manuals which he might reasonably have consulted for assistance in identifying foodplants were arranged according to the Linnaean method. In fact, it was clearly explained in Berkenhout's *Outlines*, the same work used by Abbot in 1772 to name and classify the insects in his drawings. The entire second volume was an application of Linnaean botany to the British flora, prefaced by a treatise on the sexual system, with classes and orders explained as being based on such organs as stamens and pistils. It would seem at first analysis that Abbot could hardly have failed to notice the Linnaean classification of plants.

When considering such a dilemma, one might suspect that Oemler erred, or distorted Abbot's knowledge of Linnaeus' botanical system. The idea is strengthened by a more general statement which prefaced his account of Abbot and the stamens: "You will be astonished when you hear that a man, so long amusing himself with Natural History, should never have been inclined to pursue it scientifically, he, although now 83 years of age, is still in the simplicity of a Schoolboy."⁷⁷ Oemler was of course referring to scientific "simplicity," and the comparison of Abbot's scientific approach to natural history — or, rather his supposed lack of it — to that of a schoolboy, after a lifetime of useful contributions to entomology, ornithology and scientific illustration, is even stranger than the reference to his delayed awareness of Linnaeus' sexual system. Certainly Abbot was far from being a skilled systematic zoologist, but he pursued the study of insects and birds in a manner which, in the sense of his time, can only be characterized as scientific. The only explanation to fit the facts is that Oemler's remarks about unscientific pursuit and simplicity were principally directed to the area of natural history with which *he* was almost entirely concerned; in the unfortunate and inaccurate generalization, as well as the specific example of the stamens, he was criticizing Abbot's botanical knowledge.

Oemler's comments cannot be interpreted as willful attempts to malign Abbot. He was, in fact, one of the old man's closest friends and most vigorous supporters. His true feelings emerge in a letter to T. M. Harris lamenting his own lack of success in raising a subscription to alleviate Abbot's poverty.⁷⁸ And it was Oemler who had elicited the "Notes" from Abbot and had sent the manuscript to T. W. Harris as an effort to further his ancient friend's reputation, which he feared had been diminished by LeConte and other workers who had used Abbot's drawings and notes to their own advantage. Oemler was well aware of the real worth of Abbot's work, and when writing to a mutual friend he saw no reason to

conceal what he honestly felt to be a shortcoming. There is evidence to indicate that he was not mistaken.

The botanist and lepidopterist Adrian Hardy Haworth praised the result of Abbot's collaboration with Smith, "the whole Plants as well as Insects being scientifically delineated and described, [so] that this publication is to the full as valuable to the Botanist, as it is to the Entomologist: we never beheld the sister sciences walk so closely, and so engagingly hand in hand, as in this interesting volume. It is truly a *Flora et Entomologia*."⁷⁹ Smith, who incidentally was a very competent botanist, could hardly have disagreed. (Abbot's botanical contributions to the volumes were limited to the drawings of plants, many of the common names, and occasional comments; the scientific names were Smith's responsibility.) When reviewing the species of plants originally described by Smith in the 1797 book, James Britten found no fault with Abbot's iconography.⁸⁰ But Oemler was not alone in his criticism. At least one other knowledgeable American botanist who was actually working continuously with native plants found fault with a number of Abbot's botanical illustrations. In 1811 William Baldwin inspected the Abbot water-colours in the Savannah library at the request of Henry Mühlenberg, and reported that they were "much more accurate than some others of older date, as they have been recently executed under the inspection of the more scientific Oemler."⁸¹ In a later letter to Mühlenberg, Baldwin suggested that other botanical drawings by Abbot which he had seen, "though beautiful, are generally very defective."⁸² Baldwin's statements lend substantial credence to Oemler's account of Abbot's difficulties with botany.

Probably the solution to the dilemma is found in Abbot's confession, made in 1817 to his correspondent Heinrich Escher, that he was "no Botanist but only an admirer of the wonderful beauty[,] forms and variety of plants and flowers."⁸³ Despite the opportunities of his London years and the knowledge of his friends, Abbot did not study scientific botany. He knew the common names of a large number of British and American plants, and these appear to have been sufficient for most of his purposes. The likely conclusion is that for a long while he did not comprehend the numerical significance of stamens and pistils, perhaps because he had thought it unnecessary to learn the floral classes and orders of Linnaeus. He may have borrowed or owned only the portion of Berkenhout's text which included the animal kingdom — the volumes were published separately over a period of several years — or he may simply have ignored the botanical pages; there have been stranger occurrences in the history of science. When he left for America, Abbot planned to collect botanical specimens as part of a general plan, but apparently he did not actively do so until much later. He did learn the scientific names of certain American flora, but observation, rather than Linnaean manuals, led him to the foodplants of his

insects. If we are to believe the well-meaning remarks by Oemler about Abbot's "simplicity," his formal knowledge of botany was still deficient in old age, although the evidence shows that for some years he had known the Latin names of an increasing number of plants. Probably this more sophisticated knowledge was coeval with his late interest in collecting individual botanical specimens and representative herbaria for customers and friends.⁸⁴

Throughout much of his life, Abbot's investigations into scientific nomenclature seem to have been undertaken when he wished to identify his arthropods and birds. Even then, he was frequently unable to provide names for those of his American specimens which had been described, because in Georgia he did not have access to sufficient literature. He eventually consulted a number of works on the American fauna,⁸⁵ but he never fully overcame the taxonomic consequences of his relative isolation. Although such problems may have been in Abbot's mind when he decided to leave for the New World, they were hardly a deterrent to a young man who was thinking of the relatively unexplored entomological riches which waited at the end of a brief journey to the west.

NOTES

⁶² Abbot's drawing of *adamsi* was noticed by Andrey Avinoff and Nicholas Shoumatoff, "An annotated list of the butterflies of Jamaica," *Ann. Carneg. Mus.* 30 (1946), 269. F. Martin Brown and Bernard Heineman, *Jamaica and its butterflies* (London, 1972), 285, had some doubts as to whether "Abbot had before him a specimen of *Eurema adamsi*," but the nearly rectangular apices of the forewings of Abbot's specimen would suggest that he did.

⁶³ Abbot, "A natural history of North American insects," f. 88r, James Edward Smith Papers, Linnean Society of London.

⁶⁴ Most of the sets of American drawings which Abbot prepared for customers were accompanied by notes on the species which he depicted, and furnished with manuscript title-pages, although the watercolours were not necessarily intended for publication; see fn. 19 above.

⁶⁵ Roy A. Rauschenberg, "Daniel Carl Solander," *Dictionary of scientific biography* (New York, 1970-1980), 12: 515.

⁶⁶ Drury, *Illustrations*, 1: xvi-xvii.

⁶⁷ Drury to Carl Linnaeus, 30 August 1770, Drury letterbook, 212, BM(NH). Later Drury wrote that he had "received a most complaisant Letter from Dr. Linneus concerning my present"; Drury to Paul D. Giseke, 26 January 1771, Drury letterbook, 227, BM(NH).

⁶⁸ Drury, *Illustrations*, 1: xvi.

⁶⁹A useful chronology of natural history imprints during the critical years of the eighteenth century when Linnaean thought was entering Britain is furnished by Richard B. Freeman, *British natural history books, 1495-1900: a handlist* (Folkestone, Kent and Hamden, Conn., 1980). More needs to be written on the acceptance of Linnaeus' ideas by British zoologists. See Allen, *The naturalist in Britain*, 31, 40-43, and William T. Stearn, "The reception of the *Species plantarum* in England and its influence on British botany," chapter IX of his extensive introduction to the Ray Society facsimile of Carl Linnaeus' *Species plantarum*, 1753 (London, 1957), 75-80. Stearn's appendix to Wilfrid Blunt, *The compleat naturalist: a life of Linnaeus* (London, 1971), 242-249, is a convenient introduction to Linnaean classification and nomenclature. Other useful studies are John L. Heller, "The early history of binomial nomenclature," *Huntia* 1 (1964), 33-70, and Stearn. "The background of Linnaeus's contributions to the nomenclature and methods of systematic biology," *Syst. Zool.* 8 (1959), 4-22.

⁷⁰Or nearly so, e.g. the observation that cockroaches were found "in bake houses, and near chimnies" (H3) is Berkenhout's, not Abbot's. Curiously enough, Abbot used Berkenhout's misspelling "Papileo" for "Papilio," the clue which led to the discovery of the dependence on Berkenhout's book.

⁷¹Albin did not include *paphia* in his book. Of course Abbot would have had ample opportunity in London to consult Lister's Latin edition, *De insectis* (London, 1685), of Johann Goedart's work. Abbot was familiar with Moffet's *Insectorvm sive minimorum animalium theatrvn* (London, 1634), or the English translation, *The theater of insects* (London, 1658), as he later wrote about the "bad Copies of Mouffet's Insects" in Richard Brookes' *A new and accurate system of natural history* (London, 1763 and later editions); Abbot, "A natural history of North American insects," f. 90v, James Edward Smith Papers, Linnean Society of London.

⁷²Charles F. Cowan, "Boisduval and LeConte, *Histoire generale et iconographie des lepidopteres et des chenilles de l'Amerique septentrionale*," *J. Soc. Bibliophy nat. Hist.* 5 (1969). 31.

⁷³Rogers, "John Abbot," 42.

⁷⁴Dow, "John Abbot," 70. The original has not been located. The spelling "differend" is printed by Dow.

⁷⁵Stearn's appendix to Blunt, *The compleat naturalist*, includes a brief explanation of the "sexual system"; 243-245. Augustus G. Oemler (1774-1852) was born in Hettstedt, Germany. He emigrated to America when he was in his teens and became a pharmacist in Savannah, Georgia. Although as a naturalist Oemler was principally interested in botany, becoming very knowledgeable in the subject, he pursued entomology to some extent and kept a collection of insects. His dates, furnished from family records, have not been verified.

⁷⁶Stearn, "The reception of the *Species plantarum*," 80.

⁷⁷Dow, "John Abbot," 70.

⁷⁸Augustus G. Oemler to Thaddeus M. Harris, 22 May 1840, Thaddeus Mason Harris Papers, Massachusetts Historical Society, Boston.

⁷⁹Adrian H. Haworth, "Review of the rise and progress of the science of entomology in Great Britain," *Trans. ent Soc. Lond.* 1 (1807), 51. The issuing society was formed by the reorganization of Haworth's third Aurelian Society, and was not related to the later group which became the Royal Entomological Society of London.

⁸⁰James Britten, "Smith's Georgian plants," *J. Bot., Lond.* 36 (1898), 297-302.

⁸¹William Baldwin to Henry Muhlenberg, 23 December 1811, *Reliquiae Baldwinianae*, ed. William Darlington (Philadelphia, 1843), 52, 56.

⁸²William Baldwin to Henry Muhlenberg, 3 January 1815, *ibid.*, 155. Other comments about Abbot's drawings are in the correspondence. Abbot wrote about his negotiations with the library in Savannah; Abbot to Heinrich Escher, 18 April 1813, Abbot-Escher correspondence, Department of Rare Books, Olin Library, Cornell University.

⁸³Abbot to Heinrich Escher, 14 April 1817, *ibid.*

⁸⁴At the age of 84 Abbot observed that "There is a great variety of flowers in Georgia, but I am no Botanist, yet I am always much pleased, when I meet with any that is new to me"; Abbot to Thaddeus W. Harris, 30 August 1835, Dow, "John Abbot," 72. The original has not been located. One recipient of Abbot's botanical specimens was Stephen Elliott (1771-1830), author of *A sketch of the botany of South-Carolina and Georgia* (Charleston, [1816-] 1821-1824). Elliott acknowledged Abbot's contributions, and retained some of the plants in his herbarium, which is now located at the Charleston Museum.

⁸⁵Abbot's later correspondence, notes and drawings provide the evidence. Although his friend Oemler was the first Librarian of the Savannah Library Society, an 1839 inventory of the library indicates that it had very few relevant works on natural history; *A catalogue of the books belonging to the Savannah Library Society* (Savannah, 1839). See also Richard D. Arnold, "Address before the Georgia Historical Society. . . July 24, 1871," *Collns Ga hist. Soc.* 3 (1873), 413-428. The only title in the collection entirely devoted to insects was Thomas Say, *American entomology* (Philadelphia, 1824-1828), bound in one volume. Abbot may have used the library's set of Wilson's *American ornithology*; he certainly consulted the work somewhere. Abbot is known to have purchased books in Georgia and surely had access to Oemler's private library. I am indebted to Barbara Bennett, Georgia Historical Society, for information about the Savannah Library Society.

Current Literature

The Marsh Flies of California by T. W. Fisher and R. E. Orth.
vii + 118 pp., 31 plates (including 3 halftones), 43 maps,
6 tables. Wrappers. Bulletin of the California Insect Survey,
volume 24. University of California Press, 1983. Price \$20.00.

The Sciomyzidae (otherwise known as Snail-killing or Marsh Flies) are one of the most intensively studied families of acalyptrate Diptera in the Holarctic. As larvae they are predators and parasitoids of aquatic and terrestrial molluscs. Partly because of their potential importance as biological control agents, about a third of the world total of 700 described species have had their immature stages described, a high proportion in comparison with most families of flies.

Fisher and Orth commenced their publications on Californian and western North American Sciomyzidae 20 years ago, and since then they have revised the taxonomy of several genera in this region and have described the immature stages of a number of species. 'The Marsh Flies of California' is therefore a summary of over 20 years intensive field collecting, rearing and taxonomic description, and as such is a fine example of the fusion of these different aspects of entomology. The magnitude of the survey is exemplified by the total of about 24,000 specimens examined.

As with other publications in this series the relatively large format and inclusion of clear line drawings and halftone plates make for a very attractive volume. The reviewer was particularly interested to see the plate of six photographs depicting Californian collecting sites — the type of worthwhile background information which is lacking in most European works of this type. Another feature to be greatly commended is the inclusion of full data for all specimens photographed or drawn.

Points which can be criticised are minor, and few misprints were noted. The key to *Pherbellia* would be given greater precision if the length of arisal hairs was stated, or compared with the depth of the third antennal segment. It would have been helpful if more female terminalia had been illustrated, because although about half the species are figured, some female *Pherbellia* (and perhaps also *Limnia*) may be difficult to identify reliably without associated males. However, all the 49 species known from California (*Dictya montana* is separated into 4 forms), plus 8 extra species known from adjacent States which may yet be found in California, are keyed and have illustrations of the male genitalia. This represents a notable addition to knowledge of the Sciomyzidae of the western United States.

For British dipterists it is of interest to note that 9 of our 65 species are known from California, and 2 more which occur nearby are also included. The techniques employed on this survey, espe-

cially the use of a D-Vac portable suction collector, will be widely applicable elsewhere — funds allowing! Altogether this is a fine publication based on much original work, and it is warmly recommended to all dipterists with an interest in this family — I. F. G. MCLEAN.

Notes and Observations

DISCOVERY OF THE LARVAE OF THE LARGE HEATH (COENONYMPHA TULLIA (MÜLL.) IN THE WILD. — Although the larvae of *Coenonympha tullia* have frequently been reared from eggs laid in captivity, they have only rarely been found in the wild and never in any great numbers. It is commonly stated in the literature that the larvae of *C. tullia* feed on the leaves of White Beaked Sedge (*Rhynchospora alba*). However *R. alba* is often very scarce or even completely absent from sites where *C. tullia* is very numerous. One must therefore assume that *C. tullia* has some alternative larval foodplant to *R. alba*. The most likely appears to be cotton grass (*Eriophorum vaginatum*) which I have always found to grow in profusion wherever *C. tullia* occurs.

In early May 1983 I attempted to sweep for the larvae of *C. tullia* in their habitat whilst they were feeding at night. I did this for seven full nights in four different localities in northern England but failed to find a single larva. I therefore assumed either that the larvae must be feeding very low in the grass or that they were on some completely different plant.

During last year's flight season I captured several female *C. tullia* and experienced no difficulty in obtaining eggs from them. The young larvae fed well on *E. vaginatum* during the day. I expected that when they became large after hibernation they would start feeding nocturnally but this was not the case. The continued to feed by day even during their final instar and this prompted me to try to find larvae in the wild again, but this time by day.

On 9th May 1984 I returned to a small moss in south Northumberland accompanied by Mr. Christopher Reid. We searched the cotton grass tussocks systematically and after about ten minutes I found a single larva. It was feeding at the top of a stem of *E. vaginatum* in the centre of a large tussock. Another two hours of searching produced a further fifteen larvae, each one feeding in a similar manner and always in the largest tussocks.

During the next four days we visited four more *C. tullia* localities throughout northern England and managed to find over one hundred larvae. The larvae were most conspicuous in the middle of the day because they were then feeding at the top of the stems. In the early morning and late afternoon they were much deeper in the tussocks and consequently less easy to find.

The only evidence I have of an alternative foodplant was the discovery of a single larva feeding on *Eriophorum angustifolium* at a site in South Yorkshire. However they are known to feed on a number of species of grass in captivity. — T. M. MELLING, Brooklands, 206 Chorley New Road, Heaton, Bolton, Lancs BL1 5AA.

A NOTE ON BREEDING ANAGRUS ENSIFER DEBOUCHE (HYM.: MYMARIDAE). — On the 2nd of April 1982 I collected about 300 stems of *Juncus effusus* from Hengistbury Head, Bournemouth, Dorset. I spent the next two days slitting them open with a razor blade and found about 100 eggs of a species of Homoptera. The eggs were transparant, elongated pear shape. Some of the eggs were clear, others had a yellowish content at the wide end, while others had red dots on either side of the egg. Some of the eggs were parasitised and contained partially developed mymarids with the chitin beginning to form; in others these parasitic imagines were completely developed, lying prone with antennae turned back along their sides. I placed these eggs in petri dishes on blotting paper which I kept dark and moist with distilled water and watched the mymarids at daily intervals. On the 17th of April 1982 I noticed that some of the mymarids had altered their position and the antennae were now bent. I took three eggs to be photographed and upon my return noticed that the heat from the microscope light had appeared to have dried up the eggs, so I laid them in distilled water on a slide ready for dissecting. However, I was called away for a couple of hours and upon my return the mymarids had begun to move again, drawing up their legs in the manner adopted by athletes when limbering up. The most movement was in the head turning from side to side. I placed the slide under the microscope and observed the insect's mandibles being used to bit its way out of the egg. I then found that it was using it's mandibles to roll the egg material into a ball, the mandibles moving like hands carefully rolling and turning the ball, so that it may have been getting sustenance from it. The process of turning the ball took several hours and was quite fascinating to watch. Finally, the insect emerged, head first then the antennae followed by the front legs and so on. At this stage the egg-ball was disposed of and once clear of the egg the mymarid proceeded to flick it's wings, stretch it's legs and occasionally prance like a young horse. The process had taken about twelve hours. Once it was free I was able to identify it as *Anagrus ensifer*, principally by it's exceptionally long ovipositor. I placed the mymarid in a three by one cm. tube and it survived without nourishment for six days.

When looking through the *Juncus*, I found *Anagrus ensifer* eating it's way through the stem, but could not see any egg ball as witnessed earlier, and I wondered whether this was a substitute for eating it's way out of the stem. Occasionally I found mymarids facing the small end of the host egg. In some eggs there were as

many as six mymarids, in others two, three and four. The last that emerged were invariably of smaller stature and failed to survive. I watched one *ensifer* after making frantic attempts in search of an oviposit situation, oviposit in an egg already carrying several partially developed mymarids. — GEOFFREY VASSIE, F.R.E.S., 40 Cranleigh Gardens, Southbourne, Bournemouth, Dorset.

A YEAR TO REMEMBER FOR SUGARING ENTHUSIASTS. — The mid-summer of 1982 was notable for a prolific number of humid, thundery nights without the honeydew which often makes sugaring futile. Rumours of the Heart Moth (*Dicyccla oo* L.) being common in Ashted Common, Surrey made me decide to try its old haunts at Ruislip Woods, Middlesex, as it had not been found commonly there for a long time.

The night of 13th July followed a sultry breathless day with dim reverberating rumbling of thunder from all about, but no special direction. A fine line of about 40 perimeter oaks to Copse Wood were duly sugared 15 minutes before dusk. The concoction was from a pound each of black treacle and sand sugar with $\frac{1}{2}$ pint water to dilute and laced with stale beer. Even as the nectar was laid out, noctuae started to buzz expectantly round the treat.

Maybe I was too late in the evening or in the year, but either way no *D. oo* graced my sugar. However I was startled to see a large, oval, seething pale ring of noctuae shoulder to shoulder to get at the sugar, with the weaker non-footballers barged to the ground below, where they soon discovered drops that had run off the trunk. 143 individuals were counted on one patch and 131 on another, the majority being Dunbar (*Cosmia trapezina* L.) with four of the blackish ab. *nigra* form. The wine-red and light ochreous speckled forms of the Suspected (*Parastichtis suspecta* Hbn.) were welcome as were the following:— (approximations) 3,500 Dunbar, 200 each of Copper Underwing (*Amphipyra* sp.), Dark Arches (*Apamea monoglypha* Hufnagel) and Large Yellow Underwing (*Noctua pronuba* L.), 100 Light Arches (*Apamea lithoxyla* D. & S.), 50 each of Marbled Minor species (*Procus* sp.) and Small Angle Shades (*Euplexia lucipara* L.), 30 Suspected (*P. suspecta*), 20 each of the Bird's wing (*Dypterygia scabriuscula* L.), Double Square-spot (*Amathes triangulum* Hufnagel) and Smoky Wainscot (*Mythimna impura* Hbn.), 10 Old Lady (*Mormo maura* L.) and Dingy Shears (*Enargia ypsilon* D. & S.), five Heart and Dart (*Agrotis exclamatoris* L.), three Dusky Brocade (*Apamea remissa* Hbn.), two Slender Brindle (*Apamea scolopacina* Esper) and one each of Shoulder-striped Wainscot (*Mythimna comma* L.), Grey Arches (*Polia nebulosa* Hufn.) and Double Dart (*Graphiphora augur* Fab.).

I was fortunate to take two *oo* at sugar in Surrey and, on 16th July, in half an hour, eleven Light Crimson Underwing (*Catocala promissa* D. & S.) came to sugar in a well known locality, mainly in mint condition. A fortnight later on a night of few moths, a

Dark Crimson Underwing (*Catocala sponsa* L.) was taken by someone else. A year to remember for sugaring enthusiasts. — M. R. BRITTON, 67 Bramley Garth, Appletree Village, York YO3 0NQ.

THE EMPEROR MOTH: *SATURNIA PAVONIA* L. IN EPPING FOREST, ESSEX. — It would seem worthy of placing on record the occurrence of *Saturnia pavonia* in Wanstead Park, the southernmost portion of Epping Forest, during 1984. Two males were very quickly assembled there at about 4.00 p.m. on 22nd April using a female reared from ova obtained in Berkshire in 1983. This would appear to be only the second record of *pavonia* in Epping Forest since 1903: the first being a gravid female taken at the Epping Forest Conservation Centre light trap on 8th May, 1981 (*vide Ent. Rec.* 93:158). Wanstead Park has been fairly thoroughly surveyed for Lepidoptera for over five years, and in that time I have never seen adult emperors, nor found any of the earlier stages, and there is consequently some doubt as to whether or not the species has persisted undetected here.

In Essex as a whole the species is fairly widespread, although in this south-western corner it is apparently not numerous. A single larva was brought to me for identification during 1981 by a workman clearing brambles (*Rubus fruticosus* agg.) from a ditch at Redbridge, some four kilometres to the north east, whilst slightly further afield it occurs sparingly at Hainault Forest.

Recent changes in the management of Wanstead Park by the Conservation of Epping Forest have included much felling of sycamore (*Acer pseudoplatanus*) and dead elms (*Ulmus* sp.) and this has resulted in a tremendous spread of brambles to cover large areas in dense, impenetrable patches. Possibly the species has indeed persisted here at low level and is now taking advantage of the increase in one of its principal foodplants in this region. I would certainly urge Essex Lepidopterists to try assembling this species elsewhere in Epping Forest during 1985. — C. W. PLANT, Assistant Curator (Natural Sciences, Biology), Passmore Edwards Museum, Romford Road, Stratford, E15 4LZ.

REMARKABLE ABUNDANCE OF *QUERCUSIA QUERCUS* L.: PURPLE HAIRSTREAK IN 1983. — I am surprised nobody else has commented on this fact and begin to wonder if my experiences are shared by others. During one excursion on August 3, *Q. quercus* appeared to be present every time I stopped the car in East Kent, always in the vicinity of tall isolated oaks. The first occasion was in East Blean Wood, where parts had been felled leaving the oaks untouched. The first oak tree revealed half a dozen butterflies, the second had perhaps a dozen flying round the top and occasionally coming down to settle on the road surface. As I stood and looked around, I was able to see that all the distant oaks were swarming with *quercus*. A little further on I stopped the car in Owls Hatch Lane, to the north of Thornden Wood. Within a minute, several

quercus had appeared along the hedgerow. Once again the source turned out to be a row of tall oaks bordering a nearby field. The same thing was experienced at Holly Hill, to the west of Church Wood and again around Dunkirk.

Later in the month it was a similar story as I spent a few days in West Kent, Surrey and the Sussex borders. August 18: Chiddingstone churchyard; Hever and surrounding lanes. August 19: Headley Heath near Dorking; on the green at Abinger; Blackdown Hill near Haslemere. On each of these occasions I did not stop for long in any one place and I was not particularly looking for the butterfly. With such an abundance of oaks in the Weald and other areas, it occurs to me that perhaps the situation was similar right across the south-east. Certainly I have never seen *quercus* in such large numbers and in so many widely scattered localities. — C. J. RANDALL, "Driftwood", The Old Coastguards, Pegwell Bay, Ramsgate, Kent CT11 0NH.

AN ADDITIONAL RECORD OF EUCHROMIUS OCELLEA HAWORTH IN BRITAIN. — Following Mr. Skinner's note on *E. ocellea* in Britain (*Ent. Rec.*, 96:98), I would like to add my own record of this moth. For three successive nights in February 1982, I ran a Heath trap in a meadow by my home here in Trebrownebridge, and caught nothing. The minimum temperatures were 7°C. (cloudy), 0°C. (clear with a full moon), 9°C. (cloudy). On the fourth night (9th February 1982, 10°C. cloudy), I caught one moth only, which proved to be *E. ocellea*. I took it to be a female, as there was no apparent transparent patch in the cell of the forewing, and the antennae were not ciliate. — A. SPALDING, Penzephyr Farm, Trebrownebridge, Liskeard, Cornwall.

BIVOLTINISM OF CAMPAEA MARGARITATA IN BRITISH ISLES. — Doubtless many readers can contribute to the question of where the northern limit of bivoltinism in *Campaea margaritata* L. lies, raised by B. K. West (Vol. 96: 126).

At Fritton, on the Norfolk-Suffolk border I took a male to light on 30.viii.81. I consider this a second brood, as Morley (*Mem. Suff. Nat. Soc.*, 1: 85) mentions only late June as this moth's season of flight in East Suffolk, not far south of Fritton. Wingspan measurements may also indicate the second brood, and my male from Fritton measures 31 mm., cf. 39 mm. for the male in South, 3: Pl. 108!

In Contin, Scotland, however I took the species in late July, probably representing a single-brooded race. But perhaps Scotland's milder west coast has the bivoltine race, as Mr. West's quotation of the dates on the Isle of Canna seem to indicate. E. P. WILTSHIRE, Wychwood, High Road, Cookham, Berks.

CAMPAEA MARGARITATA L. BIVOLTINE IN S.-E. ENGLAND. — Mr. West can add Essex, a county north of the Thames, to those in which second brood *C. margaritata* have been recorded. In a

list of captures on Mersea Island in 1893, W. Cole wrote "One startling capture was a *Metrocampa margaritaria* (a May or June insect) on September 2nd, in good condition" (*Essex Naturalist* 7: 126). The second brood would still be startling in Essex. — A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

THE LARGE HEATH: COENONYMPHA TULLIA (MÜLL.) AS A VICTIM OF SUNDEW (DROSERA SPP.). — On 7th July 1983, whilst visiting a moss not far from Carlisle, Cumberland, I found an adult large heath butterfly (*Coenonympha tullia*) still alive but firmly stuck to a leaf of the insectivorous plant *Drosera anglica* (Great Sundew). During the course of the afternoon I came across several more *C. tullia* in a similar situation. In addition, one butterfly was found stuck to a leaf of the much smaller Common Sundew (*Drosera rotundifolia*). However, while I watched, it managed to free itself after a brief struggle. A large proportion of the free flying butterflies in this population showed some evidence of sundew contact in that they had dark patches on their wings where the scales had been stuck together. This apparent evidence of sundew contact is noticeable in many *C. tullia* localities, but nowhere else have I found the butterflies actually in contact with the plant. — T. M. MELLING, Brooklands, 206 Chorley New Road, Heaton, Bolton, Lancs BL1 5AA.

EXTRAORDINARY SURVIVAL ABILITIES OF LARVAE OF THE LARGE HEATH: COENONYMPHA TULLIA (MÜLL.). — I have been rearing the larvae of *Coenonympha tullia* in buckets containing growing cotton grass (*Eriophorum vaginatum*). In an attempt to simulate the natural boggy conditions in which this butterfly occurs I have been regulating the water level in the containers by hand. After a period of absence in early January 1984 I returned to find the foodplants completely submerged in frozen water. I waited until the ice had thawed and then poured the excess water away, never really expecting anything to have survived. When the first few warm days of spring arrived in early April I checked the containers and was rather surprised to find that a number of larvae had survived their winter ordeal.

The ability to survive complete immersion in water has been noted in other marsh dwelling larvae such as *Lycaena dispar* and *Euphydryas aurinia* (E. B. Ford, *Butterflies*, p.100). However, this is the first case known to me of a butterfly larva evidently able to withstand being frozen solid in water. — T. M. MELLING, Brooklands, 206 Chorley New Road, Heaton, Bolton, Lancs BL1 5AA.



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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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FROM THE TREASURER

I am pleased to announce that the subscription for 1985 remains unchanged at £10.00 (U.K.) and £11.50 (Overseas). It would help The Record considerably if these amounts could be paid promptly.

In order to avoid very high bank charges, The Record now uses The National Girobank. For those who wish to credit their subscription directly to our account, the number is 55 843 4207 in the name of 'The Entomologist's Record'. I regret that the National Westminster account is no longer available, and all existing Banker's orders should therefore be cancelled.

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NATIONAL BUTTERFLY RECORDING SCHEME

The revised Biological Records Centre/British Butterfly Conservation Society recording scheme aims to collect information on localities which are important for butterflies and on the distribution of species. This is the only comprehensive national recording scheme for butterflies and is directed to helping conserve them in the British Isles. All butterfly records would be welcomed and confidentiality will be observed where necessary.

Please write for details to:—
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Recording Scheme Organiser,
19 Corner Close,
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TA21 8QE.

A REVIEW OF BRITISH BUTTERFLIES IN 1983

By Dr. C. J. LUCKENS *

Warm weather soon after the New Year in 1983 produced some unusual butterfly records. The strangest of these was in the Malvern area where a presumed Holly Blue butterfly was disturbed from a winter log pile on January 8th. There were also records of *Aglais urticae* L. from various parts of the country around this time.

April was one of the wettest on record but because of the build up of butterfly numbers the previous year the hibernators turned out in strength whenever the sun did appear. While riding in company with my wife and eldest son in the woods between Owslebury and Winchester on April 15th, one of those rare sunny spring days, all the early spring butterflies were to be seen in profusion. In fact I cannot remember ever before seeing so many post hibernation *Nymphalis io* L. at the one time. Every substantial nettle patch was patrolled by several Peacocks and as we rode through one sunlit glade at the edge of the downs, near Cheesefoot Head, I counted 12 *io*, 3 *urticae*, 4 *Polygonia c-album*, and 6 male *Gonepteryx rhamni* L.

Spring *Pararge aegeria* L. were much later in emergence than usual and it was mid May before I saw them in any numbers near here — this time in a wood near West End. The reports seemed to indicate that *aegeria* had a mediocre year in the spring hatch but the summer broods tended to be better than average. The Speckled Wood persists in the isolated north east Scottish localities, where specimens were seen on August 10th at Munloch in the Black Isle. *Lasiommata megera* L. had a good year generally, though in mid Sussex numbers were low, even in the late summer brood. In the north, it is only during the last decade that the Wall Brown has invaded Northumberland, but it is now one of the commonest butterflies along the Tyne Valley. It was also frequent in some coastal Cumbrian sites.

Among the other Satyrids, 1983 was a year of expansion for Ringlet colonies throughout England. In Wessex, it was later than usual in appearance, but occurred plentifully. Excellent numbers were reported from the lanes of East Kent and similar reports were obtained from North Dorset where form *arete* was not uncommon. Many of the paler, greyish, northern form were seen at Great Orton, Carlisle on July 7th. *Maniola jurtina* L. also flourished in most areas, and a strong colony near Shaftesbury, Dorset produced a remarkable crop of rare varieties. Most lepidopterists were agreed on the abundance of *Pyronia tithonus* L. in 1983 — it seems to have been building up numbers almost everywhere during the last few

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seasons. Until the late 1970s it was fairly uncommon in Thanet and now outnumbers *jurtina* in that part of Kent.

Eumenis semele L. was as abundant as usual at Portland, (with ab. *holanops* present) and reasonable numbers appeared at Ballard Down near Swanage. *Semele* continues to turn up in the Folkestone area (one was reported from the Leas in 1983) though unfortunately I have no further reports from Folkestone Warren, where it has been making something of a comeback in the last few years. The Grayling continues to hang on precariously in one or two downland sites in east Sussex, and in one of these up to 20 were noted in mid August. The Marbled White also had an excellent season, with local abundance in Kent, Sussex and Hampshire. In the Midlands *Melanargia galathea* L. is on the increase in Worcestershire with a tendency to spread north. There was a definite sighting in Wyre Forest and the first specimen in nearly 30 years was recorded from near Stafford. *Coenonympha tullia* Müll. was reported commonly throughout its range in Northern England and Scotland in 1983, with a marked increase in numbers in Northumberland where it is normally a scarce butterfly. Regarding its near relative *Coenonympha pamphilus* L., I have had the definite impression of a falling off in abundance in the last few seasons. Once one of the most ubiquitous butterflies, I now find it quite local in this area of southern Hampshire and virtually confined to the chalk. Below average numbers were also reported from Kent, parts of Sussex and Rosshire. It is perhaps a butterfly whose fortunes often go unnoticed, because of its generally accepted banality. *Erebia aethiops* Esp. in Scotland was noted as especially common in Strathglass, in the northern Highlands, at the end of July. At Arnside, Cumbria, the famous colony of this butterfly was down in numbers however, and one recorder saw only 20 or so on a fine sunny day in mid-August. *Erebia epiphron* Knoch on the other hand showed a more than 90% increase from the previous year in one Cumbrian colony.

After the poor spring (and some unsettled periods in late June), most regions of Britain enjoyed superb weather thereafter until early September, Owing perhaps to these cold conditions earlier on in the season the emergence of some species was markedly retarded. The fritillaries *Argynnis aglaia* L. and *Argynnis paphia* L., for example, were both virtually absent until the second week of July, and *Limenitis camilla* L., though subsequently common in nearly all its localities, appeared only a few days earlier. The White Admiral is another butterfly which appears to be gaining ground in the west Midlands, with records from Warwickshire and Worcestershire — one was even recorded in the built up part of Worcester itself. In general the woodlanders had a good year particularly in the southern English woods. *A. paphia* L. was scarcer than usual in Wyre forest however, and *Argynnis adippe* L. had a poor year in the

Malverns. The High Brown Fritillary still hangs on in one site in Hampshire, but sadly the overall picture in the south is one of continuing decline. *Leptidea sinapis* L. the Wood White, failed to come up to expectations when I visited the Chiddingfold/Plaistow area on June 10th, and it was also reported as very scarce in the Worcestershire/Hereford localities.

In the same Sussex woods where *sinapis* was scarce, the Purple Emperor positively flourished in 1983. It was relatively common in all its favoured localities and its magnificent dark wings were seen in several newly-recorded sites. Still no records appear from the former Northamptonshire colonies, but there were three reputable sightings in Worcestershire in 1983. Though it was well into the second week of July before the emergence started, the flight period extended throughout August. There was one unusually early sighting of the Purple Emperor, in the New Forest on June 24th. This was witnessed by three people, in an area a few miles south of Lyndhurst, where, to my knowledge, *iris* has not been recorded for many decades. In view of this exceptionally early date in a late year, one wonders if it was perhaps a release.

Some of the other Nymphalids, such as *Polygonia c-album* L. had a very mediocre year and though many Peacocks survived the winter, the summer hatch was poorer than usual. A similar situation occurred with the Small Tortoiseshell which was remarkably scarce in many areas throughout the season. Records for *Vanessa atalanta* L. were also sparse, but it was recorded from the coast of Kent to Muir of Ord, Rosshire, and also from the Isle of Handa, Sutherland on 26th July. *Vanessa cardui* L. was very scarce indeed. I saw perhaps half a dozen flying with the clouds of *Colias croceus* Geoff. in a Dorset lucerne field near Corfe in mid August, and several appeared on Buddleia at Pegwell Bay, Kent at the end of July, but elsewhere only singletons were recorded at any one time.

The Small Fritillaries has a patchy time, *Clossiana selene* D. & S. did well in Scotland, particularly in Argyleshire, and was noted in a new locality at Fannich, Invernesshire. In Cumbria it appeared in good numbers only at Great Orton, near Carlisle. *Clossiana euphrosyne* L. on the other hand, was scarcer than usual in the west Highlands, but in eastern Scotland, where it is usually very local, it was recorded at Munloch in the Black Isle on June 10th. This fritillary was frequent at some of the Cumbrian colonies, at Arnside and Gaitbarrows. At Howe, it was seen from June 7th to July 9th. In the south the main problem for the small fritillaries is habitat deterioration, and it is highly worrying to see the gradual diminishing of both butterflies and suitable sites in famous localities such as the Chiddingfold woods. In Kent the very existence of the two *Clossiana* is in doubt though 12 years ago *euphrosyne* at least, was locally abundant in the wealden woodland

around Ham Street and Great Chart. Nevertheless, Kent still retains strong populations of *Mellicta athalia* Rott. which had a good year in Blean Woods in 1983. There were healthy signs of colony expansion and there was a report of several hundred flying in one area of coppiced chestnut on July 5th.

Several colonies of *Hamearis lucina* also persist in Kent, usually at very low levels. That they are somewhat precarious is illustrated by one population in woodland near Chartham where there was an increase in 1983 but only a dozen individuals were noted. The Duke of Burgundy had a good year in several Lake District localities, though it has disappeared from one site in this area due to Forestry Commission activity. At the well known north Yorkshire site near Thornton Dale, only six *lucina* were seen and here photographers outnumbered butterflies by 2 to 1! Over two dozen *lucina* were seen by the same recorder in another locality in the same area near Pickering. At least 20 sites for this butterfly are known from the Gloucestershire Cotswolds and it appeared in several new places in North Dorset in 1983. Another local insect, *Euphydryas aurinia* Rott., had a generally good year. It was relatively abundant in the isolated Worcestershire site and this was thought to be due to habitat improvement. In Cumbria there have been recent reports of decreasing numbers and local extinction, so it is a pleasure to learn that, in two sites at least, the butterfly is doing well. In one of these 27 webs of larvae were noted in 1983.

The Holly Blue also appeared in Cumbria, but only spring brood examples were recorded here. Both broods appeared in Southern England — though the first was weak in most areas. Between mid-July and early August numbers built up and the summer brood appeared throughout southern England from Kent to the Midlands. In the Folkestone area they could be seen in plenty every fine day from July 25th till August 20th — especially along the Leas. In Thanet it is apparently a common insect most years in the parks and gardens of towns. Reports of the Holly Blue also appear from Kew, Surrey, with great regularity. In the Brighton area the Holly Blue made a modest comeback in 1983, but the second brood larvae suffered when a late summer gale blew salt inland for miles, causing death of both food plant and young caterpillars.

The hot July/August weather encouraged the late broods of *Aricia agestis* D. & S., *Polyommatus icarus* Rott. and *Lysandra bellargus* Rott. to flourish remarkably, but sadly *Lysandra coridon* Poda failed to share in this *Lycaenid* bonanza. It was reportedly down on numbers in most localities, including Portland. The Adonis Blue did especially well in the Isle of Wight, and at Ranmore Surrey. All areas, with the exception of

north east Scotland reported a bumper year for *icarus*. *Cupido minimus* Fuessl. had mixed fortunes. A very local colony in the border counties had reduced to only six specimens, after a count of 50 specimens the previous year. A new Cumbrian locality was discovered late in the season, (July 8th) with a population of about 10 at that date. In southern England the first brood was late, with a peak emergence in the third week of June. Possibly this explains the poor showing in the second brood, which was virtually non-existent away from the coastal localities. *Aricia artaxerxes* Fab. was back to usual strength in the borders after a population explosion in 1982. In Perthshire about 40 were recorded flying around one small birchwood.

Among the Hairstreaks extremes of abundance and scarcity were apparent. The Green Hairstreak *Callophrys rubi* L. had a disastrous season throughout the south, probably because of the unsettled cold weather during much of its flight period. In north east England the very local colonies did quite well however. The Purple Hairstreak, in contrast, was unusually abundant, being noted at many new sites throughout southern England and the Midlands. This does not necessarily indicate expansion of range, and one recorder made the point that most observers fail to scan the tree tops patiently enough to record *Thecla quercus* L. during periods of average population density. In east Kent *quercus* was undoubtedly about in exceptionally large numbers, particularly in the Blean area, where both woodland and isolated roadside oaks were favoured. Throughout Surrey, Sussex and Hampshire, this pattern was repeated — of exceptional numbers and ubiquity. *Thecla betulae* L. also had a good season, with local fluctuation on the credit side in Worcestershire and Hampshire. *Strymonidia w-album* Knoch at least held its own in the west Midlands in 1983 and several new localities were discovered in Hampshire and Sussex for this now intensely local Hairstreak.

Many people commented on the disappointing numbers of *Antocharis cardamines* L., but I personally found it as frequent as ever in this area of Hampshire. In mid May it was especially abundant at Nursling, on the western outskirts of Southampton. In northern England *cardamines* maintains the foothold gained after its expansion in the 1970s and is now found commonly along the Tyne valley. In north east Scotland it seems to be continuing its spread along the Beaully Firth and was recorded in a new locality at Redcastle on May 23rd.

Hesperia comma L. had a successful season in 1983. At its only known Kentish locality it was recorded much more commonly than in the three previous years. It yet survives in the isolated Gloucestershire site, though I understand the terrain there is an unusual one for this species. It was well up to strength though late in emergence in Hampshire, and in Surrey and Oxfordshire numbers were good. In east Sussex it still holds on in the sole remaining

locality near Alfriston. Encouraging reports were received of *Carterocephalus palaemon* Pall. in the west Highlands. Numbers were maintained in most localities and markedly increased in a few. *Palaemon* has a flight habit of darting to swift invisibility; it can survive at very low density; it can be intensely local. Unrecorded now for nearly a decade in the woods of the Midlands, might it still survive there at low density?

Acknowledgements

I should like to thank the following lepidopterists for their contributions to this year's review: A. J. Baldwin, R. D. Barrington, T. Bernhard, R. W. Carr (per J. M. C-H), J. M. Chalmers-Hunt, R. M. Craske, D. Dey (per J. M. C-H.), J. E. Green, D. C. Hulme, M. Enfield, M. J. Y. Foley, D. B. Furmage, T. Melling, C. J. Randall, Rev. J. Vine-Hall, and Miss E. J. Warren. Many of the above-named faithfully send seasonal reports each year and to them I am particularly indebted. A special thank you also to Mrs. F. Moffat who, with a classification list before her, patiently types these reviews and other papers.

A Bibliography of Irish Entomology by J. G. Ryan, J. P. O'Connor and B. P. Beirne. 4to., portrait, 372pp., stiff wrapper. Edition limited to 500 copies. 1984. The Fly Leaf Press, 4 Spencer Villas, Glenageary, Co. Dublin, Ireland. Price IR £12.

The compilers have combined successfully to produce this useful work from an amalgamation of B. P. Beirne's *Annotated and Classified Bibliography of Irish Entomology (to 1948 for Lepidoptera; 1946 for other orders)* (published in 1979) and a bibliography by J. G. Ryan and J. P. O'Connor of all references published since those dates, and up to and including 1980. It is in fact an attempt at listing all papers, articles and notes published during the whole of this period dealing with or mentioning Irish insects, and contains over 5000 references.

Broadly speaking, the references are classified under their respective orders excepting those that treat of more than one order, in which case they are listed in the "General Papers" section. References dealing primarily with parasitic Hymenoptera are listed under Hymenoptera even though their non-Hymenopteran host may be mentioned in the text. References dealing with the occurrence, importance or control of insects as pests are listed separately under "Pest Control". With each order the items are arranged alphabetically under authors, then chronologically under authors' names.

Well presented and printed on a good paper in an easy to read type, this strictly limited edition is exceptionally good value for money — J.M.C.-H.

A GENUS AND SPECIES OF MALACHIINAE
(COL.: MELYRIDAE) NEW TO BRITAIN

By A. A. ALLEN, B.Sc., A.R.C.S.*

Late in July, 1982, my friend David Appleton (who, coleopterist readers may recall, was the first to find *Axinotarsus marginalis* Lap. in this country) took by beating an oak at the roadside near Titchfield Common, S. Hants., what he at once saw was another small Malachiine new to our fauna. From his description and drawing (*in litt.*) I had no hesitation in identifying it as a species of *Sphinginus* Rey, presumably *S. lobatus* O1. — using Freude, Harde, & Lohse (1979), where a male of the species is figured. On my advice it was submitted to Mr. P. J. Hammond at the BMNH who was able to confirm the species as that just named, pointing out further that *S. lobatus* was essentially a West European insect and might therefore be expected to occur in Britain.

Meanwhile Mr. Appleton made strenuous efforts to obtain more examples during that and the following summer, without success; indeed it began to look as though the 1982 beetle were a chance importation. Not long ago, however, I received the welcome news that he had just (24.vi.84) swept five specimens from a grassy bank where a few oaks grew, at Netley, near Southampton Water (SU 450090). The bank was just above the shore and formed the edge of a park. Further search at the Titchfield Common site was again without result, suggesting that the original specimen was probably a late straggler from a colony elsewhere. On 1st July Mr. Appleton returned to the Netley locality but found no more there; however, at another site — West Wood, also at Netley — he swept a further four examples from grassy areas under oaks.

Sphinginus lobatus is readily recognized among our smaller Malachiinae. It has some general likeness to a small dark *Axinotarsus*, but is somewhat narrower; the form of the pronotum — longer than broad, the sides contracted and sinuate behind with marked rectangular hind angles — is quite characteristic. The colouring also is distinctive: brassy black above (elytra obviously metallic), extreme basal margin of pronotum (more widely at the angles) and apex of elytra narrowly, yellow; appendages largely dark. It further differs from *Axinotarsus*, but among our species agrees with *Hypebaeus*, in not having the elytra clothed with upright dark hairs; in fact the upperside appears very nearly glabrous. Unlike those genera, the male lacks special structures ('Excitatoren' of German authors) at the elytral apices; but like the former of them, that sex has the second segment of front tarsi prolonged on the outer side beyond the insertion of the third.

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In the work cited above, *S. lobatus* is recorded from Holland, Belgium, the Rhineland and the south-west of mid-Europe, and indicated as very rare. In view of the latter datum, its presence as a breeding species in southern England is perhaps surprising, but (as noticed above) is quite compatible with its known distribution. Regarding the habitat, it may be significant that oaks were a feature of all three sites in S. Hants. where the beetle was taken. Mr. Hammond suggests that it develops in some such situation as dead twigs of oak or other trees, and that this is also probably true of *Axinotarsus*. Certainly *A. ruficollis* Ol. and *A. marginalis* Lap. are to be found most freely, where they occur, by sweeping under trees — for *A. pulicarius* F. the available data are insufficient. It is worth noting that *A. marginalis* occurred at each of the *Sphinginus* sites.

Acknowledgement

I am most grateful to Mr. David Appleton for a specimen of this very interesting addition to our list, as well as for furnishing all the information connected with its discovery, which he desires me to publish.

Reference

Freude, H., Harde, K. W., & Lohse, G. A. 1979. *Die Käfer Mitteleuropas*, 6: 66. Krefeld.

GRAPTOLITHA ORNITOPUS HUFN.: GREY SHOULDER-KNOT IN N. W. KENT. — This species has been only very rarely noted in N. W. Kent; indeed, L. W. Newman in *Woolwich Surveys* (1909) states the moth to be rare, and A. Showler omits the species for Abbey Wood (*Ent. Rec.* 68: 124 *et seq.*). On April 13th, 1980 a male came to my garden m/v light at Dartford, while during the autumn of 1983, from Sept. 30th until Nov. 2nd., more than three dozen were seen, mainly settled upon the trunks of horse chestnut trees in a limited area of parkland at Dartford, and others were seen on tree trunks in an adjacent residential area, five were attracted to my garden m/v light and one was seen at night at ivy blossom.

All the moths settled upon tree trunks, especially the dark trunks of horse chestnut and scots pine, were extremely conspicuous. B. Kettlewell, *Evolution of Melanism* (1973) stated that melanism had not yet appeared in *G. ornitopus* in Britain, although in N. America all the related species of the genus had distinct dark forms. By comparison with the three dozen *ornitopus* seen on tree trunks in the area, only three other moths were observed, single specimens of *Antitype flavicincta* D. & S., *Amphipyra pyramidea* L. (in a deep crevice) and *Xanthorhoe fluctuata* L. — B. K. WEST, 36 Briar Road, Bexley, Kent.

MICROLEPIDOPTERA — A REVIEW OF THE YEAR 1983

Compiled by DAVID J. L. AGASSIZ*

1983 was a strange season, the long cold and wet spring was followed by a long hot summer. This meant that large catches of moths at light were commonplace in the peak of the season, but fieldwork early in the year, when so many larvae are to be found, was rather inhibited.

Resident species new to Britain continue to be found. During this year *Callisto coffeella* was discovered by R. M. Palmer in the Eastern Highlands of Scotland, *Phyllonorycter staintoniella* by R. J. Heckford in Cornwall and a *Scobipalpula* species by E. C. Pelham-Clinton in Dorset. In addition *Nematopogon variella* has been added to the British list by the researches of Dr. K. P. Bland.

The name of the species reported last year from Cornwall is now revealed as *Agonopterix kuznetzovi*; this moth might have been named by its discoverers in this country who first recognised it as a new species, but resolved to find out more about it before going into print. The restraint urged by the British Museum (Natural History) and British editors is commendable for avoiding further confusion in the nomenclature despite the delays whilst extensive enquiries are made. It is a pity that such a code of behaviour is not internationally observed as is the Code for Nomenclature.

The known range of some rare species is significantly extended: The appearance of *Rhigognostis incarnatella* in the Isle of Man is remarkable, whilst it is encouraging to hear of another record from the Highlands of Scotland. The beautiful *Oecophora bractella* breeding in Hampshire should stimulate collectors to look in other areas for this rare species. *Aethes rutilana* in the Western Highlands of Scotland in such different terrain from the chalk downs of southern England comes as a great surprise.

Again there are several records of 'casual' species which are presumed not to be resident, though the first named could just be: *Scythris sinensis*, *Oligostigma bilinealis*, *Daraba laisalis* and *Maruca testalis*.

Species spreading their range are well attested: *Eurrhynx per-lucidalis* becoming established further north, south and west from its East Anglian base, and *Epiphyas postvittana* and *Crociosema plebejana* continuing their eastward advance.

Since last year's review some important local lists have been published which include many records which are not repeated here.

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A list of new county records for Hampshire, most of them microlepidoptera was published by B. Goater in the *Entomologist's Gazette* Vol. 34 pp. 247-255. 'Lepidoptera in the Inner Hebrides' by Peter Wormell gives a most interesting list of species from Rhum, Canna, Coll and Colonsay; it is published in the *Proceedings of the Royal Society of Edinburgh* **83B**, pp. 531-546. A 4th Appendix to the Lepidoptera of Aberdeenshire and Kincardineshire by R. M. Palmer and M. R. Young is published in the *Entomologist's Record* **83**: 162-164.

In the systematic list which follows again most records constitute new county or vice-county records, or new foodplants, but no research has been done to confirm such status. Identifications are accepted uncritically from those who have submitted information. My thanks are due to all those who have contributed who are identified by their initials: H. E. Beaumont, K. P. Bland, J. M. Chalmers-Hunt, I. C. Christie, M. F. V. Corley, A. M. Emmet, R. J. Fairclough, A. P. Foster, M. W. Harper, N. F. Heal, R. J. Heckford, R. P. Knill-Jones, J. R. Langmaid, H. N. Michaelis, R. M. Palmer, E. C. Pelham-Clinton, R. E. M. Pilcher, A. N. B. Simpson, F. H. N. Smith, R. A. Softly, P. A. Sokoloff, D. H. (& P. H.) Sterling, R. G. Warren and M. R. Young.

A slightly longer duplicated list of all records received is available from the compiler. The year is 1983 unless stated otherwise.

MICROPTERIGIDAE

Micropterix aureatella (Scop.)

Skye (104) 29.v.83 — DJLA

ERIOCRANIIDAE

Eriocrania unimaculella (Zett.)

Derryvilla & Cushina (H18)
9.iv.83, Ringowney (H24)
24.iv.83 — KGMB

NEPTICULIDAE

Etainia decentella (H.-S.)

Faringdon (22) 12.vii.83 — MFVC

E. sphendamni (Her.)

Maldon (19) 20.iv.83 feeding of the overwintering generation of larvae in buds of *Acer campestre* — AME, *Ent. Rec.* **96**: 22f.

Ectoedemia heringi (Toll)

Glasgow (77) — RPK-J

Trifurcula griseella Wolff

Ben Hogh, Coll (103) 2.vii.83 — ICC in KPB, *Ent. Rec.* **96**: 209

T. eurema (Tutt)

Rochestown (H4) 31.v.83 — KGMB

Stigmella marginicolella (Stt.)

Trentham (39) empty mines — RGW

- S. speciosa* (Frey) Worcs. (37) – ANBS
S. myrtillella (Stt.) Worcs. (37) – ANBS
S. samiatella (Zell.) Peasmarsh (14) 17 – 21.vii.83 – ECP-C, *Ent. Rec.* **96**: 140
- OPOSTEGIDAE**
Opostega auritella (Hb.) Barton Turf (27) 13.vii.83 – JRL
O. crepusculella Zell. Strathblane (86) – RPK-J
- TISCHERIIDAE**
Tischeria angusticolella (Dup.) Whitstable (15) mines 11.ix.82 – NFH, *Ent. Rec.* **95**: 116
- INCURVARIIDAE**
Lampronia oehlmanniella (Hb.) Sheffield Moors (63) – HEB
L. praelatella (D. & S.) Skye (104) – MWH
L. morosa (Zell.) Thorne Moor (4) 16.vi.83 – RJH
Nematopogon variella (Brandt) Recognised as British – KPB, *Ent. Gaz.* **35**: 33-37
N. pilella (D. & S.) Known range restricted to Lancs. (59) and Coll (103) – KPB, *ibid.*
Nemophora degeerella (L.) Longbridgemuir (72) 25.vi.77, Kirkconnell Flowe NNR (73) – Sir A. B. Duncan, *Ent. Rec.* **95**: 123f
- PSYCHIDAE**
Diplodoma herminata (Geoff.) Hoardweel (81), Loch Lomond (86) and Mugdock Wood (99) – KPB & MRY, *Ent. Rec.* **96**: 209
- Proutia betulina* (Zell.) Worcs. (37) – ANBS
- TINEIDAE**
Haplotinea insectella (Fabr.) Welson (36) vii.83 – MWH; Winchester (11) 30.vii. & 1.viii.83 – DHS
Triaxomera parasitella (Hb.) Rowardennan (86) 28.vi.83 – MRY
Triaxomasia caprimulgella (Stt.) East Blean (15) 19.vii.81 – ESB, *Ent. Rec.* **96**: 184
Monopis imella (Hb.) Mucking (18) 26.ix.68 – R. Tomlinson; Possil Marsh, Glasgow (77) – RPK-J
Niditinea piercella (Bent.) West Melson (63) 3.vi.82, most northerly record – HEB

Tinea columbariella (Wocke)

Worcs. (37) — ANBS

LYONETHIDAE

Bucculatrix cristatella Zell.

Ross-on-Wye (36) vi.83 — MWH

B. maritima Stt.

Newquay (1) cocoons — P. A. Siddons per FHNS

HIEROXESTIIDAE

Oinophila v-flava (Haw.)

Paignton Zoo (3) 19.vii.83 — RJH

GRACILLARIIDAE

Caloptilia rufipennella (Hb.)

Glasgow (77) — RPK-J;
Nairn (96) — DJLA; Glen Shee (89), Aboyne (92), Nethy Bridge (95) — M. R. Shaw, *Ent. Rec.* 96: 57
Glasgow (77) found emerged — RPK-J

C. azaleella (Brants)

C. falconipennella (Hb.)

Preston-on-Wye (36) 1. — MWH; Matley Bog (11) — JRL & DHS

Parectopa ononidis (Zell.)

Worcs. (37) & E. Gloucs. (33) — ANBS Saffron Walden (19) 26.vii.83 — AME

Parornix fagivora (Frey)

West Meon (11) 6.vi. 83 — DHS

P. scoticella (Stt.)

Littlebourne (15) bred — NFH, *Ent. Rec.* 95: 212; Douglasmuir Wood (99) bred — RPK-J

P. finitimella (Zell.)

Callisto coffeella (Zett.)

Woodthorpe (54) — HEB
Glen Callater (92) 18.vi.83, New to Britain — RMP, *Ent. Rec.* 96: 41f

Phyllonorycter tenerella (Joann.)

P. messaniella (Zell.)

West Melton (63) — HEB
Bred from *Nothofagus*, Aberdeen (92) — MRV

P. corylifoliella (Hb.) f. *betulae*

East Ham (18) — C. W. Plant, *Ent. Rec.* 96: 179

P. ulicicolella (Stt.)

P. staintoniella (Nic.)

Worcs. (37) — ANBS
Bred from *Genista pilosa*, St. Agnes (1) 2.viii.83, new to Britain — RJH, *Ent. Gaz.* 35: 73-75

P. quinqueguttella (Stt.)

Toraston, Coll (103) mines 2.viii.83, Southernness Dunes (73) mines 11.vii.82 — KPB, *Ent. Rec.* 96:209

- P. trifasciella* (Haw.) Arniston Mains (83), Boltonmuir Wood (82), Isle of Coll (103) — KPB, *Ent. Rec.* 96:209
- Phyllocnistis saligna* (Zell.) Leckford (12) mines viii. 83 — DHS
- CHOREUTIDAE**
- Choreutis pariana* (Clerck) 1. on *Sorbus* & *Cotoneaster* — M. R. Shaw, *Ent. Gaz.* 35: 41 — 44
- GLYPHIPTERIGIDAE**
- Glyphipterix schoenicolella* Boyd Isle of Coll (103) — KPB & ICC, *Ent. Rec.* 96:210
- G. equitella* (Scop.) Torquay (3) 3.vii.83 — RJH
- YPONOMEUTIDAE**
- Argyresthia dilectella* Zell. Bred from 1. on *Chamaecyparis* 9.iv.83, Brownbridge (18) — AME
- A. ivella* (Haw.) Newton, I.o.W. (10) '82 — RPK-J
- A. sorbiella* (Treits.) Balmaha & Ross Point (86) vi.83 — KPB, *Ent. Rec.* 96:210
- Yponomeuta rorrella* (Hb.) Peasmarsh (14) 22.vii.83, Emer Bog (11) 30.vii.83 — JRL
- Kessleria saxifragae* (Stt.) Mull of Kintyre (101) at 700 ft. — RPK-J
- Zelleria hepariella* Stt. Alford (54) — HEB
- Swammerdamia compunctella* (H.-S.) Beinn Eighe (105) larvae confirmed on *Sorbus aucuparia* — DJLA, *Ent. Rec.* 96: 12.
- Ocnerostoma friesei* Svensson Alford (54) 8.v.83 — HEB; Worcs. (37) — ANBS
- Scythropia crataegella* (L.) Old Rossington (63) 5.vii.83 — R. I. Heppenstall per HEB; Bourton-on-the-Water (33) — J. Newton, *Ent. Gaz.* 34: 86
- Rhigognostis incarnatella* (Steud.) Feshiebridge (96) vi.83 — MWH; Ballavolley, I.o.M. (71) 30.vii.83 — KGMB
- EPERMENIIDAE**
- Phaulernis fulviguttella* (Zell.) Bred from Scots lovage *Ligusticum scoticum*, north Aberdeenshire (93) — MRY

Epermenia illigerella (Hb.)

Trerhos (45) 20.vi.83, new to Wales — DJLA

COLEOPHORIDAE

Coleophora serratella (L.)

1. on *Salix caprea* —

DHS, *Ent. Rec.* 96: 42

C. coracipennella (Hb.)

Orley Common (3) reared from *Crataegus* 26.vi.83 — RJH

C. prunifoliae Doets

Trowbridge (8) — M. W. Smith per AME, *Ent. Rec.* 96: 83

C. orbitella Zell.

Worcs. (37) — ANBS

C. conyzae Zell.

Grays (18) — DJLA

C. lithargyrinella Zell.

Newport (45) 1. on *Silene maritima* — DJLA, none bred.

C. tricolor Wals.

Barton Mills (29) 10.vii.83 — JRL

C. lixella Zell.

Skye (104) — MWH

C. ochrea (Haw.)

Gower (41) new to Wales — ANBS; Gillingham (15) — NFH, *Ent. Rec.* 96: 132f

C. serpylletorum Her.

Sandwich (15) — NFH, *Ent. Rec.* 96: 107

C. saturatella Stt.

Worcs. (37) — ANBS; Herefs. (36) — MWH

C. deviella Zell. (= *suaedivora* Meyr.)

Essex (19) — RF, *Ent. Rec.* 96: 164

C. artemisicolella Bruand

Denaby Ings (63) 1. fairly common on *Artemisia vulgaris* ix. 83 — HEB

C. tamesis Waters

Plymouth (3) 26-27.vi.83 from 1. on *Juncus articulatus* — RJH; Winchester (11) 8.vii.83 — DHS

C. caespititiella Zell.

Monks Wood (31) cases on *J. articulatus* 17.ix.83 — AME

C. salicorniae Wocke

Emer Bog (11) at MV well inland — JRL

ELACHISTIDAE

Elachista regificella Sirc.

Worcs. (37) — ANBS

E. alpinella Stt.

Clynnog Fawr (49) 25.viii.83 — HNM

E. dispunctella (Dup.)

Howth (H21) 19 & 30.vi.83 — KGMB

Biselachista cinereopunctella (Stt.)

Pitt Down (11) 1. 7.iii.83 — DHS

- B. utonella* (Frey) Winchester (11) 14.vii.83 – DHS
- Cosmiotes consortella* (Stt.) Southsea (11) 13.viii.83 – JRL
- OECOPHORIDAE**
- Schiffermuelleria subaquilella* (Stt.) Leek Moors (39) 10.vii.83 – RGW; Heddons's Mouth (4) 13.vi.83, most southerly record – RJH
- Telechrysis tripuncta* (Haw.) Botley Wood (11) 12.vi.83 – DHS
- Esperia oliviella* (Fabr.) Harewood Forest (12) bred from larvae in rotten wood – JRL & DHS
- Oecophora bractella* (L.) Harewood Forest (12) bred from larvae under bark – JRL & DHS, *Ent. Rec.* **96**: 54; Trelleck (35) bred from larvae under bark of *Larix*, *Pinus* & *Tsuga*, 6.iii.83 – JRL
- Parocystola acroxantha* (Meyr.) Yeovil (5) 29-30.v.81 – G. H. Youden, *Ent. Rec.* **95**: 103
- Amphisbatis incongruella* (Stt.) Freathy (2) 1. on *Thymus*, feeding on dead flowers, 25. ix.83 – JRL
- Semioscopis steinkellneriana* (D. & S.) Eccleshall (39) 5.v.83 – G. Moss per RGW
- Enicostoma lobella* (D. & S.) Eastnor (36) larvae ix.83 – MWH
- Depressaria badiella* (Hb.) Dungeness (15) 19.vii.83 – JRL
- f. aurantilella* Tutt
- D. weirella* Stt. Portsdown (11) 12.vi.83, 1. on *Anthriscus* – JRL
- Agonopterix nanatella* (Stt.) Purfleet (18) – DJLA
- A. kuznetzovi* Lvovsky Life history in Britain & description – JRL & ECP-C, *Ent. Gaz.* **35**: 67 - 72
- A. scopariella* (Hein.) Haldon Hill (3) bred – RJH
- A. astrantiae* (Hein.) Denbigh (50), Flintshire (51) and Millers Dale (57) 1. – HNM

ETHMIIDAE

- Ethmia bipunctella* (Fabr.) Christchurch (11) 16.viii.83 – E. H. Wild, *Ent. Rec.* **95**: 231

GELECHIIDAE

Metzneria metneriella (Stt.)

Templeogue (H21) 17.vi.83 — KGBM

Eulamprotes atrella (D. & S.)1. mining shoots of *Hypericum hirsutum* making shoots wilt, then leaving stems each making a case from a leaf of the foodplant which discolours and in which it pupates in early May — ANBS*Monochroa lucidella* (Steph.)

Perranporth (1) 23.vii.83 — P. Siddons & RJH; West Melton (63), Woodthorpe (54) — HEB

M. conspersella (H.-S.)

Catfield (27) 12-13.vii.83 & Barton Turf (27) 12.vii.83 — JRL

M. hornigi (Staud.)

Southsea (11) 29.vii.83 — JRL

M. divisella (Doug.)

Catfield (27) 12-13.vii.83 — JRL

Teleiodes waga Now.Wye (15) viii. 79 — ESB; Orlestone Forest (15) 16.vii. 83 — JMC-H, *Ent. Rec.* **96**: 125*T. alburnella* (Zell.)

Queenswood (36) 3.viii.83, Rotherham (63) 26.vii.83 — HEB

Brytrophia boreella (Doug.)

Ae Moor, Dumfries (72) '82 — RPK-J

B. desertella (Doug.)

Burray (111) 8.viii.83 — DJLA

Gelechia scotinella H.-S.Dedham (19) bred 22.vi.75 — P. C. Follett, listed by Emmet *Smaller moths of Essex* as *cuneatella**G. muscosella* Zell.

Dungeness (15) 19-22.vii.83 — JRL

Scrobipalpa murinella (H.-S.)Isle of Coll (103) 1. 2.viii.83 — KPB, *Ent. Rec.* **96**: 210*Scrobipalpula* sp.

Dorset (9) probably a species new to Britain, publication awaited — ECP-C

Caryocolum vicinella (Doug.)St. Abbs (81) 1. — KPB, Ailsa Craig (75) — ICC & RPK-J — KPB, *Ent. Rec.* **96**: 210

- C. alsinella semidecandrella* (Threl.) Gower (41) – ANBS; Tregirls dunes (1) 4.viii.83 – FHNS
- C. fraternella* (Doug.) Saltfleetby-Theddlethorpe (54) bred from 1. on *Cerastium* – HEB; Parkgate, Dumfries (72) '82 – RPK-J
- Reuttia subocellea* (Steph.) Southsea (11) 25.vii.83 – JRL
- Syncopacma larseniella* (Gozm.) Catfield (27) 14.vii.83 – JRL
- S. sangiella* (Stt.) Coll (103) – ICC & RPK-J
- S. cinctella* (Clerck) Grays (18) genitalia checked – DJLA
- Acanthophila alacella* Zell. Wye (15) viii.83 – ESB, *Ent. Rec.* 96: 126
- Oegoconia quadripuncta* (Haw.) Basingstoke (12) 27.viii.83 – H. E. Dobson; Worcester (37) – ANBS
- O. deauratella* (H.-S.) Stratford-on-Avon (38) – J. Price per ANBS, most westerly record
- O. caradjai* Pop-G. & Cap. Peasmarsh (14) 19.vii.83 – JRL
- BLASTOBASIDAE**
- Blastobasis decolorella* (H.-S.) Glasgow (77) em. 26.x.81 from dead flower heads of *Rhododendron* – RPK-J
- STATHMOPODIDAE**
- Stathmoposa pedella* (L.) Denaby Ings (63) 17.vii.83, most northerly record – HEB
- MOMPHIDAE**
- Cosmopterix orichalcea* Stt. Maiden Castle (45) 22.vi.83, new to Wales – AME
- C. lienigiella* L. & Z. Freshwater (10) – RPK-J
- Limnaecia phragmitella* Stt. Possil Marsh (77), Pollok (76), Arran (100) – RPK-J
- Mompha lacteella* (Steph.) Renfrewshire (76) J. Morgan per RPK-J
- Spuleria flavicaput* (Haw.) Renfrewshire (76) J. Morgan per RPK-J
- Blastodacna atra* (Haw.) Southsea (11) – JRL
- Sorhagenia janiszewskae* Reidl Southsea (11) 29.vii.83 – JRL; Woodbury (3) larval mines – AME
- SCYTHRIDIDAE**
- Scythris grandipennis* (Haw.) Trerhos (45) bred from *Ulex galii* – DJLA
- S. fletcherella* Meyr. Leckford (12) 12.vii.79 – JRL

S. sinensis (Felder & Rog.)

Margate (15) two specimens in a shop, May 1980, new to Britain — APF

COCHYLIDAE

Phalonidia affinitana (Doug.)

Donabate (H21) 18.vi.83 — KGMB

Aethes rutilana (Hb.)

Beinn Eighe (105) bred from *Juniperus communis nana*, new to Scotland — DJLA, *Ent. Rec.* **96**: 13

Commophila aeneana (Hb.)

Dunstable (30) — K. E. Webb, *Ent. Rec.* **95**: 215

Cochylidia implicitana (Wocke)

Wykenham Forest (62) viii. 82 — HEB, *Ent. Rec.*, **96**: 184

Falseuncaria ruficiliana (Haw.)

Skye (104) 29.v.83 — DJLA

TORTRICIDAE

Pandemis cerasana (Hb.)

Hoy (111) 5.viii.83 — DJLA & RPK-J

Cacoecimorpha promubana (Hb.)

1. on Leyland cypress — PAS, *Ent. Gaz.* **34**: 124

Ptycholomoides aeriferanus (H.-S.)

Burnt Wood (38) 10.vii.82 — RGW; Parkhurst (10) '82 — RPK-J

Epiphyas postvittana (Walk.)

Charlton (16) 1.vi. & 7.vii.83 — A. A. Allen, *Ent. Rec.* **95**: 120 & 137; Grays (18) 27.viii.83 — DJLA

Adoxophyes orana (F. v R.)

Southsea (11) 19 & 22.viii.83 — JRL, most westerly records, *Ent. Rec.* **96**: 82

Lozotaeniodes formosanus (Gey.)

Wormelow (36) — HEB; Coventry (38) 21.vii.82 — C. Wale, *Ent. Rec.* **95**: 123

Paramesia gnomana (Clerck)

Heathfield (14) — NFH

Acleris comariana (L. & Z.)

South Ronaldsay (111) — DJLA & RPK-J

A. abietana (Hb.)

1. on *Abies randis*, Kemnay (92) — MRY, *Ent. Gaz.* **34**: 87

Apotomis sauciana (Fröl.)

Sevenoaks (16) 1., 18.v.82 — NFH, *Ent. Rec.* **95**: 182

Endothenia pullana (Haw.)

Denaby Ings (63) most northerly record — HEB

E. ustulana (Haw.)

Ham Street (15) 18-19.vii.83 — JRL

- Lobesia reliquana* (Hb.) Rowardennan (86) 28.vii.83
— KPB, *Ent. Rec.* **96**: 210
- Epinotia pygmaeana* (Hb.) Alford (54) — HEB
- E. bilunana* (Haw.) Chyverton Woods (1) 29.vii.83 — FHNS
- E. demarniana* (F.v.R.) Woodbury (3) 17.vi.83 — AME
- E. signatana* (Doug.) Galloway (73) — RPK-J
- Crociosema plebejana* (Zell.) Southsea (11) several — JRL;
Freshwater (10) 27.ix.83 — SAK-J; Faringdon (22) 8.xi.83 — MFVC, *Ent. Gaz.* **35**: 94
- Epiblema cnicicolana* (Zell.) Seaton (3) 20.vi.83 — RJH
- Eriopsela quadrana* (Hb.) Skye (104) 29.v.83 — DJLA
- Clavigesta purdeyi* (Durr.) Perrancoombe (1) 16.viii.83 — FHNS
- Cryptophlebia leucotreta* (Meyr.) Southsea (11) 10.viii.83 — JRL
- Lathronympha strigana* (Fabr.) Sprotbrough (62) reared from larva on *Lotus corniculatus* — HEB
- Pammene obscurana* (Steph.) Glasgow (77) .82 — RPK-J;
Epping Forest (18) 7.vi.83 — JMC-H, *Ent. Rec.* **95**: 169
- P. albuginana* (Guen.) Botley Wood (11) 12.vi.83 — JRL Rowardennan (86) — RPK-J
- P. aurantiana* (Staud.) Saffron Walden (19) five, 14.vii — 15.viii.83 — AME;
Perrancoombe (1) 12.vii & 16.viii.83 — FHNS
- P. trauniana* (D. & S.) Winchester (11) 1.vi.83 — DHS
- P. oxsenheimeriana* (L. & Z.) Botley Wood (11) 12.vi.83 — JRL
- P. rhediella* (Clerck) Skye (104) 29.v.83 — DJLA
- Strophedra nitidana* (Fabr.) Inchcailloch (86) 26.vi.83 — KPB
Newby Bridge (69) — E. G. Hancock, *Ent. Rec.* **96**: 185f
- Cydia compositella* (Fabr.) South Yorks (61 & 63) larvae in pods of *Lotus corniculatus* — HEB
- C. pactolana* (Zell.) Botley Wood (11) 19.vi.83 — JRL
- C. cosmophorana* (Treits.) South Devon (3) — AME;

- C. coniferana* (Ratz.) Cothill (22) 6.vii.83 — MFVC
Dicrorampha aeratana (P. & M.) Barochan Moss (76) — RPK-J
 Possil Marsh, Glasgow (77) '82 — RPK-J; Portsmouth (11) 7.vii.83 — JRL
- PYRALIDAE**
- Chilo phragmitella* (Hb.) Adderstonelee Moss (80) 3.viii.82 — KPB, *Ent. Rec.* **95**: 182
Pediasia fascelinella (Hb.) Saltfleetby (54) 22.vii.83 — REMP
Platytes alpinella (Hb.) Saltfleetby 2.viii, Gibraltar Point 30.vii., South Thoresby v.viii.83, all (54) — REMP
Donacaula mucronellus (D. & S.) Bangor (49) 15.vii.83 — M. J. Morgan per HNM; Muir of Dinnet NNR (92) viii.83-MRY
Eudonia pallida (Curt.) Possil Marsh, Glasgow (77) '82 — RPK-J
E. lineola (Curt.) Mull of Kintyre (101) — RPK-J
Evergestis pallidata (Hufn.) South Thoresby (54) — REMP; Mull of Kintyre (101) — RPK-J
Oligostigma bilinealis Snellen Bolton (59) second British record — E. G. Hancock, *Ent. Gaz.* **35**: 18
Cataclysta lemnata (L.) Possil Marsh, Glasgow (77) — RPK-J
Pyrausta cingulata (L.) Balmaha (86) vi.83 — MRY
Margarita sticticalis (L.) Gibraltar Point (54) 21.viii.75 — REMP
Eurrhpara terrealis (Treits.) Newport (45) 24.vi.83 — AME; Mull of Kintyre (101) — RPK-J
E. perlucidalis (Hb.) South Thoresby, Gibraltar Point & Saltfleetby (54) — REMP; Sittingbourne (15) — NFH; Steeple Bumpstead (19) 24.vii.83 — AME; Linford (18) 7.vii.83 — DJLA; East Ham (18) — C. M. Plant; Rudston (61) 6.vii.83 — A. S. Ezard per HEB, probably most northerly record

- Anania verbascalis* (D. & S.) Mid-Lincolnshire (54) common – REMP
- Nascia ciliialis* (Hb.) South Thoresby (54) 6.vii.83 – REMP
- Maruca testulalis* (Geyer) Mawnan Smith (1) 16.viii.83 – APF, *Ent. Rec.* 96: 28
- Daraba laisalis* (Walker) Wimbledon (17) 18.vii.83 – A. V. Dacie; Luton (30) 30.vii.83 – K. F. Webb, *Ent. Rec.* 96: 123
- Eurhodope advenella* (Zinck.) Galloway (73) – RPK-J
- Oncocera semirubella* (Scop.) Gibraltar Point (54) 2.viii.83 – REMP
- Metriostola betulae* (Goeze) Parkgate, near Dumfries (72) '82 – RPK-J
- Phycita roborella* (D. & S.) Galloway (73) – RPK-J
- Epischmia banksiella* (Rich.) Gower (41) v.83, new to Wales – ANBS, *Ent. Rec.* 96: 31
- Gymnancyla canella* (D. & S.) Lincs. (54) locally common – REMP
- Euzophera bigella* (Zell.) Saffron Walden (19) indoors 8.xii.83, second British specimen – AME
- Ephestia parasitella unicolorella* (Staud.) Saffron Walden (19) 12.vii.83 – AME
- Plodia interpunctella* (Hb.) Southsea (11) 4.viii.83 – JRL
- Homoeosoma sinuella* (Fabr.) South Thoresby (54) 16.vii.83 – REMP
- PTEROPHORIDAE**
- Capperia britanniodactylus* (Greg.) Llanrwst (50) 7.vii.80 – HNM; Tynson, Dumfries (72) '82 – RPK-J
- Platyptilia calodactyla* (D. & S.) South Thoresby (54) – REMP
- Pterophorus spilodactylus* Curt. Prestatyn (51) – HNM
- Adaina microdactyla* (Hb.) Skye (104) – MWH; Galloway (73) – RPK-J
- Leioptilus lienigianus* (Zell.) Denaby Ings (63) 19.ix.83 – HEB
- L. carphodactyla* (Hb.) Grays (18) – DJLA
- Pterophorus tridactyla* (L.) St. Abbs (81) parasitized 1. & empty pupa – KPB; near Portpatrick (74) 19.vi.83 – ICC – KPB, *Ent. Rec.* 96: 210

Correction to the Review for 1982, *Ent. Rec.* **95**: 191

Coleophora coracipennella Hb.

The specimens recorded by HEB were reared from *Prunus spinosa* as well as *Crataegus*. They are not the most northerly.

C. cerasivorella Pack.

Reared not from *Prunus spinosa*, but from *Crataegus* or *Malus* — HEB

p.192

Metzneria lappella (L.)

record for Cresswell submitted by MRY

The Lepidoptera of the Orkney Islands by **R. I. Lorimer**. 110pp., stiff cover. E. W. Classey, P. O. Box 93, Faringdon, Oxon SN7 7DR. 1983. £6.00 inclusive.

There have appeared in the past a number of lists of the lepidoptera of Orkney, the earliest being that by Traill in 1869, but this is the first definitive account to be published of the whole of the lepidoptera of these northerly islands.

Pp.1-14 include among much general information of interest, historical notes and details of publications on the subject, particulars of the most important types of habitat in the islands and the suspected origins and affinities of some Orkney lepidoptera. The 'Systematic List' which follows (pp.15-82), treats of each one of the recorded species, totalling some 390 in number. Generally speaking, the status is given with each, and whether it be univoltine or not. Dates, general notes on life-histories and larval foodplants are also furnished, and the value of the whole account is greatly enhanced by the fact that these refer entirely to Orkney experience. First records of species are given with year, authority and reference and, with many species, details of variation in the perfect insect. Two published accounts of Orkney lepidoptera appear to have been overlooked, notably (1) by Hanbury, F. J., 1895, in *Ent. mon. Mag.* **31**:1-12; and (2) by Barrett, C. G., 1898, in *Ent. mon. Mag.*, **34**:4-5. Also possibly overlooked, is the first Orkney record for *Agonopterix ciliella* Stainton as given by A. Horne (in *Br. Nat.*, **3**:172) and dating from 1893.

The work concludes with an Appendix (pp.83-85) of localities (mentioned in the text) arranged alphabetically together with 10km. map references; an Appendix (p.87) listing entomological visitors to Orkney post 1950 with dates; an alphabetical list of 83 bibliographical references (pp.89-92); and, finally an index of scientific names (pp.93-103).

Well written and nicely printed, this attractive publication should be in the hands of all entomologists and naturalists visiting the Orkneys. — J.M.C.-H.

NOTES ON VARIATION IN A NORTH DORSET
COLONY OF THE MEADOW BROWN:
MANIOLA JURTINA L.

By RUPERT D. G. BARRINGTON*

I was fortunate to have, beside our home in North Dorset, a colony of *M. jurtina* which has for several years past produced remarkable numbers of insects, and amongst these some fine varieties. Variation in insects may occur for several reasons, be it environmental, natural mutation of the genes in the reproductive cells (which occurs in one in every 10 million cells on average, regardless of any conditions) or inbreeding. Restricted colonies will inbreed to a greater extent than those that are wide-ranging and this *jurtina* colony was one of the former.

The colony occupied two fields, separated by post and rail fencing, and cut off from surrounding fields by thick hedges of sloe and oak. All surrounding fields are cut each year in June or early July so *jurtina* has no chance of establishing large colonies there. However our fields had not been cut for hay for five or six years by 1983. They are grazed in the winter by horses, and this appears to be beneficial to the growth of wild flowers, because when the fields are marshy (as they are most of the winter), the horses push the grass down into the mud as they walk over it and this prevents it from growing too thickly in the summer, thus allowing a very good growth of wild flowers. The soil is almost pure clay and this is detrimental to the growth of grass in some parts. Grass length in summer varies from ankle height to waist height. This uneven distribution enables the flowers to grow well, the most attractive to *jurtina* being thistles and knapweed. Artificial fertilizers and herbicides have never been used in the fields. Because of these near perfect conditions, *jurtina* is prolific and, due to the small area of the colony (about one acre) and its isolation from any other *jurtina* population of appreciable size, it must have interbred continually, thereby producing varieties regularly.

I first worked the area in 1981 when only one field produced good numbers of insects, as the other field was grazed by horses for much of the year. However, on the 19th July I was casually netting the few *jurtina* in a neighbouring field when I came across a male ab. *postmultifidus*, an aberration first described by the late Major-General C. G. Lipscomb (1980). The aberration is more frequently caught in the female, but this may be due to its being very much less striking in the male. I decided that if I was to see any more, the most likely place to find them would be in our fields. So I crossed over, and within half an hour was rewarded by the

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capture of a fine female from a thistle head. Two days later I took another less extreme female from within five yards of where I took the first female. This I bred from, but the results were inconclusive owing to weakness in the strain.

I did little further collecting there in 1981, but it was with great interest that I awaited the 1982 season, to see if this beautiful aberration would occur again. On the 9th July 1982, I visited the fields despite the fact that the weather was extremely oppressive and there was a constant drizzle. The *jurtina* were lively, as ever, and within a very few minutes I spotted a lovely dark female ab. *postmultifidus* on the ground. It is interesting that *jurtina* is active regardless of most weather conditions — only heavy rain will send it down deep into the grass. In overcast weather, or light rain, it is easily disturbed and flies off with no apparent regard for the conditions which render many butterflies inactive. The next day, after about two hours search, I took a pale, extreme female specimen of the same aberration (fig. 1) Although I did no more collecting there in 1982, it was now obvious that this was a recurrent form in the area.

On the 22nd July I was working a hedge on the opposite side of the village for *Maniola tithonus* L., when I saw five or six *jurtina* on a group of thistles and amongst these was an ab. *postmultifidus*. As I approached, they all flew off in different directions. One landed at my feet, and luckily, it was the aberration. This specimen poses an interesting problem. Did it breed there, or was it a vagrant from my colony? *Jurtina* is well known to be a very local insect. Indeed, Ford (1975) has found it rarely crosses any barrier, be it a hedge or a patch of close-cropped grass. Had this insect originated in my colony, it would have had to have crossed cut fields, gardens and a road. And, although this is possible, our knowledge of the insect's habits makes me think it highly improbable. I believe it bred in the area, and that there is no reason why the aberration should not occur in many of the fields around the village. The colonies are separated only by hedges, so there will be a limited gene-flow between them. But as all these fields are cut or well grazed, their *jurtina* colonies are so small that ab. *postmultifidus* will be of very much rarer occurrence there than in our fields.

In 1983 I was able to work the fields thoroughly for five days. The one which had been so good in 1981 and 1982 had not been grazed in the winter and so the grass had grown very tall and thick thus making it less easy to work and, I think, there were fewer *jurtina* there. The other field which was of little use in 1981 and 1982 was untouched during the winter of 1982 and early summer of 1983, so grass and flowers grew well making a magnificent area for *jurtina*. I made no attempt to calculate the overall size of the colony, but between 1981 and 1983 the strength of this colony increased very markedly, and in 1983 *jurtina* was there in phenomenal num-

NOTES ON VARIATION IN A COLONY OF THE MEADOW BROWN

bers. A single sweep of the net would set up between five and 15, and I am sure numbers must have run into many thousands. In early July the incredible heat wave was at its height and I tended to work the area between 9.30 a.m. and 11.30 a.m. and then after 4.30 p.m. In the morning the *jurtina* would be sitting on the thistles in large numbers sunning themselves and were easy to work, but about midday numbers dropped dramatically. Presumably they went deep into the grass to escape the intense heat, from where they were difficult to disturb. After about 4.30 p.m. they once more became lively as the heat abated.

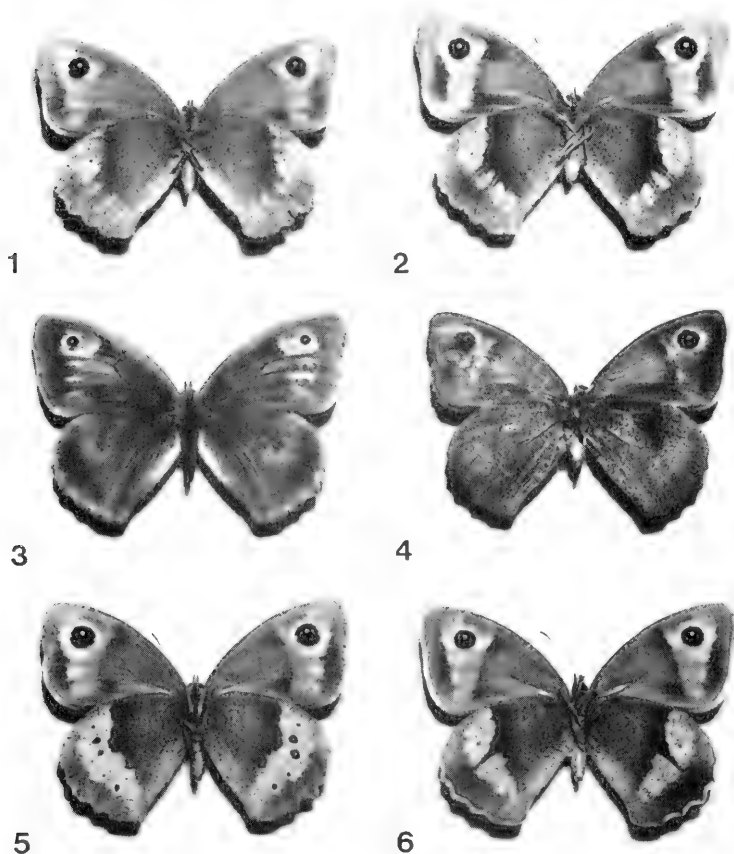


Fig. 1: ab. *postmultifidus* 1982 Lipscomb. Fig. 2: ab. *postmultifidus* 1983 Lipscomb. Fig. 3: ab. *antiaurrolancia* Leeds, 1983. Fig. 4: ab. *postatrescens* Leeds + *antinigromargo-glabrata* Leeds, 1983. Fig. 5: ab. *posttexessa*, Leeds, 1983. Fig. 6: ab. *fracta* Zweigelt, 1983.

I first worked the area on the 24th June, when the males were fresh and just emerging. But there were few females then and no variation, so I next went over the fields from 8th-12th July, at

which time the colony was at its peak. On the 8th I took a female ab. *postmultifidus* which was the most extreme I have caught. As it was damaged I set it up to lay, but despite its producing over 150 eggs, no larvae survived as they all became desiccated.

On 9th I spent a couple of hours in the field with John Simner. I took a female ab. *antiauirolancia* Leeds (fig. 3) which is quite frequent in the area, and a female ab. *antiobscura* Leeds, and J. S. captured a fine female ab. *postexcessa* Leeds (fig. 5). I also took a worn male ab. *fracta* Zweigelt. On 10th we again worked the area, when I took a female ab. *postmultifidus* and a female with homeosis on one hindwing (an orange dash running through the pale band on the underside), and J. S. took some interesting examples of ab. *excessa* Leeds.

On 11th I spent a couple of hours in the fields in the morning, taking a good female ab. *postmultifidus* (fig. 2). Donald Russwurm arrived in the afternoon to join in the hunt. The first *jurtina* he saw (and caught) was *postmultifidus*! I took five female ab. *antiexcessa*, Leeds, not an uncommon form in this colony.

The morning of the 12th was the high point of the season. After about an hour of searching I saw a dark-looking *jurtina* alight on a thistle an arm's length away. I missed but it obligingly landed at my feet. I slammed my net on it and was amazed to find it was ab. *postatrescens* Leeds, rare enough in itself, but this one also had a black border to the forewings and was shiny all over so it is also ab. *antinigromargo-glabrata* Leeds: a fine insect indeed (fig. 4)! That morning I also took a female ab. *fracta* from thistles (fig. 6).

Working the species in this colony was exhilarating, not least because of the number of false alarms. A shadow cast by a piece of grass onto a resting *jurtina* turned it into ab. *fracta* and when *jurtina* lifts its wings, the veins throw a shadow making it look convincingly like ab. *postmultifidus*. I must have seen a good 20 suspected ab. *postmultifidus* in 1983, only to find the bands disappearing on closer inspection!

On the afternoon of 12th, the fields were cut for hay, so ending the season. As the grass was lying on the ground I saw several *jurtina* laying on it — a sad and pointless procedure.

It is interesting to note that on comparison with most specimens of ab. *postmultifidus* that I have seen in other collections, the Stour Row examples are less distinct, with the bands tending to be broader and more feathery.

It was a wonderful experience to see insects in such profusion as was *jurtina* in this area, and to take extreme aberrations with almost clockwork regularity. From my notes I see that I worked the area for a total of some 12 hours during 1983, taking four major and many minor aberrations. This was so regular that having caught one I could almost guarantee not to catch another until I had worked my three hour stint.

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A note on breeding this insect may be of use. I put the caught female in a cylindrical netting cage about one and a half foot high by one foot in diameter. In this I stand a jar of thistles with a little grass. I always keep the cage as hot as possible, either by hanging it in a sheltered spot in the sun, or in a greenhouse when the sun is weak. The female will lay readily after a couple of days on the top of the cage. She pays no attention at all to the grass, which is extraordinary as I have seen *jurtina* laying on a carefully chosen bit of grass in the wild. The eggs are easily scraped off into a plastic box and hatch in about 10 days. I keep my larvae in plastic boxes with cut grass. In 1983 I put them in a plastic box with two sides of netting and they all desiccated before I realized. The adults pair readily in a shady spot. The species is strangely difficult to breed, as the larvae, if potted out, just disappear or, if boxed up, die of disease. Obviously they require conditions which are not easily simulated at home, although what these are I cannot say, because in nature the species occurs in such diverse habitats.

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Lipsomb, G., 1980. A new form of *M. jurtina*. *Entomologist's Rec. J. Var.* 92:205.

HYPENA CRASSALIS F.: BEAUTIFUL SNOUT IN BEDFORDSHIRE. — On the 6th July 1984, *H. crassalis* was observed by myself and Mr. A. Riley to be locally common at Aspley Heath in Bedfordshire. We took several moths at dusk and later more came to M. V. Local man, Mr. J. Barnwell, has taken the moth here in previous years, but its presence in Bedfordshire has until now seemingly escaped being recorded. I note from the distribution map for this species in Volume 10 of M.B.G.B.I. that this site is quite a leap into the void shown around East Anglia. — K. F. WEBB, 2 Kingsdown Avenue, Luton, Beds LU2 7BU.

CELASTRINA ARGIOLUS L.: HOLLY BLUE OVIPOSITING ON HAWTHORN. — Upon visiting Hollingbury Castle Down above Moulsecoomb in East Sussex on 23.v.84 I observed a female Holly Blue investigating flower-sprays of hawthorn (*Crataegus monogyna* Jacq.). Here it was seen to oviposit three times before my presence disturbed it and one of these eggs I managed to locate on the sepal of a ripening bud. Judging from the few works at my disposal this foodplant is little known and so I consider it worth mentioning. *Pyracantha*, also a member of the *Rosaceae* has it seems been noted as having been visited by female *argiolus*. — D. A. PRANCE, 23 Brunswick Road, Kingston Hill, Kingston-upon-Thames, Surrey.

REMINISCENCES OF AN ELDERLY ENTOMOLOGIST

By R. P. DEMUTH*

(Continued from page 195)

In the autumn of 1926 I went up to Caius College, Cambridge to read architecture. In Tree Court, Kettlewell, reading medicine, was on the next staircase and there were other entomologists I collected with: Anthony Thompson who did a lot of work on the naming of butterfly varieties; Stubbs whose parents lived at Ely and who I think went out to Malaya and Harrison who made a name for himself at painting birds. The local town guru was Worsley-Wood who, when living in London, had become the acknowledged expert on *ocellaris* which was then a rare moth but I am afraid I put his nose out of joint when I turned it up very commonly in the Brecks and finished its rarity value.

There were no outstanding collecting areas close to Cambridge but further out what other town could better Wicken and Chippenham Fens, the Brecks, Monks Wood, Warboys Wood, Bearshanks Wood and Bedford Purlieus? Needless to say that as soon as the weather got warm we were at them. The travelling was done by bicycle but at some subsequent date Bernard got a car, an open Alvis looking like a bath tub with wheels at each corner and this was a great advantage when I collected with him. This might be the moment to mention Bernard's driving which was fast and when at the same time he was looking for plovers' nests was quite alarming. You might think it was impossible to look for plovers' nests while driving a car however slowly, but this was not so when, as in so much of the country round Cambridge, there were no roadside hedges. Bernard had found that the plover made a discernible special body movement when about to sit on its nest and this is what he spotted, and if the eggs were fresh he (not I) would have plovers' eggs for breakfast. I remember us sweeping round a gentle curve into a long straight road with wide grass verges. Another open car was approaching a long way off. There was plenty of room to pass but the other driver preferred the grass verge crisscrossed with drainage ditches. As we passed, he and his passengers were shooting up and down like jack-in-the-boxes as each ditch was crossed. After a short interval Bernard exchanged his Alvis for an open Lagonda which was able to go faster. Of course cars were scarce. I and two other architectural students decided to make a tour of the cathedrals of England. The car owner drove, I navigated, the man in the back kept the log which consisted of the make of all the cars we passed and in another column passed us (shades of the M1!). Bets were taken on the hourly total – naturally won by the driver!

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May 14 (1927). I went to Monks Wood. Weather cold and rather stormy. I arrived at one and beat till seven, first in the wood to the left of the road and then in Monks Wood proper. I got two $\frac{3}{4}$ fed *pruni* (list of other larvae follows). The woods look excellent, 400 acres of ideal ground but is I believe overworked. *Betulae* is rare, there are a few *w-album*, no more *sinapis*, although *iris* is probably there still: it is said to be fairly common.

But there was a much better wood than Monks Wood off the east side of the road between Warboys and Ramsey. The wood was approached off the main road by a lane with wide verges dotted with little blackthorns. On these *betulae* was common. Behind them in the hedge were nests of *lanestris*. The wood proper sat on the escarpment between the high ground and the fen and it was of mature oak, ash and wych elm with a dense undergrowth of blackthorn, privet and hazel. When I went back about fifteen years ago I could find the lane but the wood and the little blackthorns and the *lanestris* had gone.

May 20. Kettlewell, Mitchel, Best and I went by car to a certain wood in Hunts. (i.e. Warboys — dead secret!). We got there at 3.15. We beat between us 6 *pruni* larvae and 1 pupa. It is too late and they are normally fairly common here. I also beat *betulae*, *quercus*, *sphinx*, *crataegi*. Of the five British Hairstreaks four are common, *pruni*, *betulae*, *quercus*, *rubi* and the 5th, *w-album*, probably occurs as there is a good bit of wych elm. (*Pruni* is beaten from the tops of large blackthorn bushes which are often inaccessible and the results from beating for larvae are poor but when I visited Warboys later in the year the butterfly was very common sitting on the flowers of privet.)

To me the magic of Wicken ended when the bridge was built across the Cam and the long dead end lane from Fordham to Wicken became a signposted holiday route from Birmingham to the East Coast. Up to then, to get from Cambridge to Wicken you bicycled along the muddy path on the flood bank of the Cam as far as Upware where there was an inn on the far bank and you shouted for a ferry and if the wind in the poplars was too strong nobody heard you and that was that. In large letters on the gable of the inn was painted "Five miles from anywhere. No hurry" but one was in a hurry to catch one's first *palustris*! It was safer to go the long way round through Fordham and double ones mileage. Once at Wicken you turned down the unmarked track to the fen. On the left was Barnes' cottage (the old keeper father of post-was Barnes), and from there to the lode the track was lined by diminutive half timbered cottages with thatched roofs, each with a pocket handkerchief sized garden full of flowers. If it was the right season *machaon* fluttered from garden to garden. I used to stay at Rose Cottage which lived up to its name. You could just stand upright in its rooms and the staircase was a glorified ladder. The building

regulations and modern hygiene have rightly seen that all these were destroyed. The gardens are now nettles, good for peacocks but no use for swallowtails, which I believe anyhow no longer exist at Wicken.

Wicken was run by a body of well-to-do entomologists for entomologists. I was a subscriber. It was all rather like a Hampshire chalk stream with insects rather than trout as the quarry. I am certain m.v. light traps would have been banned as unsporting. When you arrived you first made your number with Barnes and paid him 10/-. He would allocate you a section of the main drove. At weekends in the *palustris* season the drove was fully booked. If you were Cockayne or Edelsten you got the section you wanted; if an unknown Cambridge undergraduate, a bit of the rest. After a good dinner (I remember a complete roast chicken with bread sauce being put before me) you strolled on to the fen where you would find that Barnes would have sugared your section of cork strips fixed to iron posts, put up a vertical sheet, lit an acetylene burner to illuminate the sheet and provided a table and chair. All you had to do was to catch the moths! Of course this was not all there was to it. There were larvae to search for and bushes and reed beds to explore for the geometridae. Best of all there was tea with Mrs. Barnes. Everyone in the fen made a point of being present and the beginner met the expert. This is where I first met Cockayne who was to become my friend and I his executor. Edelsten was the great wainscot man and was the only collector allowed to enter the reserve, which was the bottom end of the fen cut off from the rest by an unjumpable lode. This caused me great envy and I at once assumed that he was catching species previously unknown in Britain!

May 26. Warm and fine. I went to Wicken with Thompson. *Machaon* were about in considerable numbers but they were getting over and of the dozen or more I caught to examine only one was perfect. After tea (that would be tea with Mrs. Barnes) we spent 15 minutes looking for *quercifolia* and quickly got eight (this was by using Cockayne's method of looking for well-eaten small buckthorn, holding the top in one hand and sliding the other down the stem into the reeds where right at the bottom one's fingers would touch a great big furry *quercifolia* larva. A few days later, also on buckthorn, I found a single larva of *gonostigma* (now *recens*), my first of this local insect.

As an alternative to Wicken there was Chippenham Fen which was alleged to be stiff with keepers and consequently was not approached by the main access near the village but across fields from the west finally jumping a considerable lode.

June 9 (1927). Fine but very windy. I went in the afternoon to Chippenham Fen where, after eluding two keepers, I managed to get 16 *argentula*. They were only to be found in one drove on the middle fen, the only place sheltered from the wind. Walking

along the drove they would get up three feet in front of me, quite quietly and slowly. If a net is put over them as they are doing so, they at once go deep into the long grass where they are difficult to find. Chippenham looked lovely and I always think it looks much better, artistically and lepidopterally than Wicken.

May 27 (1927). Six of us went by car and train to Bearshanks Wood, Northamptonshire after *palaemon*. We had five minutes sunshine which produced five of the butterflies. I was not in the right place at the right time, a ride carpeted with bugle, and did not see a single one. *Lucina* was also about.

June 3 (1928). Kettlewell motored me over to Northants after *palaemon*. The day was as glorious as possible. We went first to Bearshanks and found it very scarce. K got three and I one after several hours. As we left we met a lot of men from the village arriving with nets. * * * *s (name of well-known professional deleted) toadies I suppose and the cause of *palaemon*'s scarcity (I don't seem to have considered that I too might be the cause!). We then went on to Bedford Purlieus where I took ten and K a few less. They were at first difficult to catch but as the sun went low they sat about on ground ivy but even then were difficult to see.

In the last fifty years the Brecks have completely changed. In 1926 they were waste ground; now they are fields of wheat, barley and sugar beet. Then you could walk across them for miles and see nothing but sandy stony ground, sparse grass, heather, birch and pine. Or you ought to have been able to walk across them but could not as they were so heavily kept and there was so much open ground it was difficult to avoid hearing 'Hi you there! Don't you know you are on private land. Take the shortest path to the road!' Lord Iveagh, the head of the Guinness family, was the principal landlord and in the end by judicious flattery Bernard and I managed at first to be tolerated and subsequently to be taken on their rounds. The whole place swarmed with pheasant and partridge and stone curlew. At dusk the air was full of the stone curlew's call. In parts, and particularly Fleam Dyke, shrike sat at the tops of hawthorn bushes and of course all the special Breck moths were about and flourishing.

June 7 (1927). I paid my first visit to the Breck Sand district, a sandy waste given over to rabbits and plover. I went to the district between Freckenham and Mildenhall and into a field of rough fallow with a lot of clover growing in it. Here I got two of the Breck rarities, *sulphuralis* and *rubiginata*. I took 13 of the former and 8 of the latter. Both could be walked up from the rough vegetation. *Sulphuralis* flies very rapidly, especially with a strong wind behind it, but seldom for more than 10 yards and then only very low. It is insignificant on the wing and difficult to see when it pitches as it goes deep into the grass and will not come up again.

Rubiginata is easier to catch but will also not fly again when it has found a suitable place on the ground.

On June 22nd (1927) Bernard Kettlewell, his mother and I went to Millhook south of Bude in Cornwall for a week's collecting holiday. Millhook was the best-known locality for *arion*. We stayed at a farm known as the Lion's Den with a farmer of the name Burden. Mrs. Kettlewell was a very strong-minded woman. We went by rail to Bude and picnicked in the train. Nothing could be wasted so all the leftovers were collected into little parcels, the window was opened and the parcels thrown at any men seen working on the side of the line who ducked in terror at this unexpected gift. We took a taxi on to Millhook which is approached by a very steep hill down to the sea. As soon as the hill began to steepen the taxi was stopped and we were ordered out to walk to the bottom. Farmer Burden went regularly to Poundstock Market on his pony where he got very drunk and his friends would tie him on his pony for it to find its own way back. Mrs. Burden would untie him on his return. Mrs. Kettlewell witnessed this and was horrified.

Arion occurred on a steep south-eastern facing slope of short grass and thyme and gorse bushes. To make certain that no-one missed the spot the owner had put up a notice "Do not catch the flies". It was said by the experts that the time to catch the flies was in the early morning before breakfast but we saw none. The weather was awful and we were probably too early. A Mr. Tongue took the first one of the season on the day we left. *Sinapis* was common but we only saw it on the one fine day. I caught a *repan-data* variety, white with black bands, a beauty. I tossed Bernard for it and tossed the halfcrown into a large clump of brambles. We casually mentioned it to Burden and next time we passed, the clump had been cut to the ground. Half-a-crown was real money in those days. I got, and still have, the *repandata*. We were more successful in searching with hand lamps at night for larvae on the cliff face. It is wonderful what a bit of concentration on larvae searching does for one's nerves. When I saw in daylight where we had been at night I could not believe we had been so crazy. We got a lot of larvae of *nigrocincta*, *flavicincta*, *craccae*. *Craccae* was on clumps of vetch growing on the shingle at the bottom of the cliff: easier to get it in the daylight by turning the plant over. The first *craccae* pupa emerged on July 25th and all 32 by July 27th. In 1927 choughs were common on the Millhook cliffs and seals in the little bays below them. Bernard borrowed a twelve bore gun from the farmer and shot at them when they put their heads above water which annoyed me and I would go off and sulk.

There was plenty of collecting to be done when I was at home. A night tour of the gas lamps of Branksome, Parkstone and Sandbanks, all suburbs between Bournemouth and Poole Harbour, was often profitable. In those days the gas street lamps were widely

spaced so each lamp was a bright spot in a sea of darkness. I had a round. Some lamps were always better than others. As I approached a good one my bicycle would accelerate. What was that long yellow footman on the iron frame? *Quadra*? Yes *quadra*! I would lean my bicycle against the lamppost and climb up on to the saddle when I could just reach the lamp which was of course enclosed in one of those four-sided metal and glass frames one now sees outside "Ye old Tudor inn". It had to be done late at night when most were in bed. As well as *quadra*, I would get *fascelina* and *cribrum*, the latter no doubt from a stretch of damp moorland at the side of Parkstone golf course where it was then quite common.

Sugaring in the New Forest was mostly done in an enclosure called Burley New as this was nearest to our home. It was all mature oak and the rides formed a convenient round. When I was in the depths of the forest I became nervous, starting at any sound but the sugar ahead kept me going. This enclosure produced *orion*, *sponsa* and *promissa*. *Sponsa* was rare, *promissa* common. I had to kill the *promissa* straight away. On my way home I would stop my bike and look at the magnificent creatures I had captured. Home would be reached at about two. Burley New now has a fringe of oaks but the centre is fir and I assume these moths have gone.

1928 and 1929 followed the same pattern. Reading my diary I am surprised at the number of collectors on the ground. On May 6 I visited Warboys Wood: "There were about a dozen other entomologists in the wood — rather a blow when you think Warboys is a close kept secret." In early July I was at Millhook again and this time I did get *arion* "I was the eighth entomologist staying that year with Mrs. Burden." Perhaps there is something in overcollecting damaging species!

Here are a few diary extracts.

July 16 (1928). Weather as fine as ever (temperature yesterday was 91°F) so I went to Swanage. *Edusa* was in quantities in a cove below Ballard Down but in very poor condition. *Galatea* was in fine condition and common. *Aglaia* was abundant and all fluttering about in the grass, looking for females and egg laying I suppose.

July 26. In the afternoon I went to the *cribrum* place alongside Parkstone golf course and took two males flying and one female at rest on grass. I came across two nightjar nests each with two chicks.

August 2. Met an entomologist, Cole by name. Heard good news. *Iris* in the Forest again and *sponsa* common in Pamber Forest (near Reading).

August 3. Three *exigua* on our local ragwort.

August 5. A fine warm day. The autumn *edusa* are out for the first time. Numbers were flying in the clover fields out towards Hengistbury Head. The majority, especially males were dwarfed. Perhaps the drought of last month has caused it. (In those days

clover was sown as an undercrop for wheat and as soon as the wheat was harvested there was ideal ground for *edusa*.)

Burley New enclosure (New Forest) in the evening. I took 8 *promissa* and did not miss one. They sit with wings spread and give about ten seconds before they fly off but when they do they generally sit on the bracken. On one tree there were two but one very kindly sat on my knee while I boxed the other. If you use the net the general penalty is a bald thorax.

August 11. (*Geminipuncta* was very common in the reeds growing in the brackish water of Christchurch Harbour.) Last *geminipuncta* out. They emerge about 8.30 pm and pair with gusto almost at once.

August 29. New cabinet arrived. (This was my first Hill ten drawer unit. I had won a prize at Cambridge and this is what I did with the money, about £15. I now have 130 drawers, value £15 a drawer?).

Sep. 8 and 9. Staying at Freshwater (Isle of Wight). Sugared on thistles growing on the cliff edge of Tennyson Down. A fair number of *obelisca* which was getting over and *australis* common (these were the dwarf thistles with flower heads just above the turf. A few drops of sugar dropped into the flower head was effective.)

May 14 (1929). Kettlewell, Stubbs, Wiltshire and I went to Warboys Wood in the evening. At late dusk *xerampelina* larvae started to move up the ash trunks and for about a quarter of an hour they were everywhere but then they were all up among the leaves and no more were to be seen.

May 23. I bicycled to Wimpole and beat wych elm. I took 16 *w-album* and had enormous numbers of *gilvago* in my tray. (This was the famous two mile long avenue of huge wych elms leading up to Wimpole House, now long since killed by Dutch elm disease and replaced by the National Trust with oak. This was followed on the 27th by another visit with Kettlewell when we used step ladders to beat the higher branches and found *w-album* commoner than lower down.)

June 7. At Wicken for the night. At light I got *palustris* ♂, *flammea* and *vittata*. *Palustris* came at 11.10 (summer time), fluttered about in the grass for quite a time while I was putting on a sweater and then climbed up a support of the sheet away from the light. (It was on this occasion that the stentorian voice of Barnes was heard across the Fen "Mr. Demuth he got *palustris*. I always gets extra when they gets *palustris*.")

On June 10 (1929) I finished with Cambridge and went down with Kettlewell to Wye in Kent.

June 11. Toward evening (about 6.30) we went to a field in the hills to the west of Wye and walked up about 40 *lineata* in an hour. A strong northerly wind made them difficult to catch.

June 12. In the evening I saw Captain Duffield at Wye (he was

on the staff at the agricultural college and lived in a house directly below the Crown Pit) and he told me to sugar the posts round his paddock which I did. I got 18 *leucophaea* which was a record for the posts.

June 14. Returned to Cambridge for degree. In the evening I had dinner with Stubbs at his home in Ely and then went to sugar in Rosswell Pits (these were man-made and near the beet sugar factory and were of deep water fringed with reed, and because they were dangerous they were fenced round and we sugared the fence). Conditions seemed very bad, a cold 56° at 8.30, strong wind, clear sky and bright moon. Moths however came in great numbers, over 50 a patch. Captures included 23 *obsoleta*. *Unanimitis* was the commonest.

July 5. Portland. The wind increased all day and by evening it had reached 60 mph and it was almost impossible to stand on the cliffs. *Simulans* was just coming out and in prime condition, *lunigera* was not fully out yet and *lucernea* not at all. The valerian where I found them was on the tips from the first cliff quarry south of Church Ope Cove. Valerian growing on the more gentle grass slopes seemed useless, only where the plant grew among huge boulders 5 to 6 feet across did *simulans* appear (*simulans* emerges in the south in early July and in the daytime hides among rocks and crawls up to the valerian flowers at late dusk and if disturbed falls to the ground and shows no signs of flying. After aestivation it appears in September and then flies. It occurs in the garden of our house in Gloucestershire and sits on our valerian but never appears in the m.v. trap which is quite close to the valerian until September).

August 21. Went to Hopes Nose, Torquay. I took 11 *caniola* sitting about on twigs (1 pair). They sit quite still after 10 pm but very soon fall off when the light is on them and they are then impossible to find. (Hopes Nose which was quite close to central Torquay was then a good place for *putrescens*, and *barrettii* pupae were common among the roots of maritime campion growing on the scree.)

The place I visited most frequently was Hengistbury Head because it was only a mile from where we lived. It was a high gravel bluff covered in heather and terminating in steep gravel cliffs free of any vegetation. It formed the east end of Bournemouth Bay and behind it lay Christchurch Harbour which was brackish and tidal. Between the Head and the Harbour was a small wood, and to the west of the wood reed beds, and to the east salt marsh and then sand dunes and the sea shore. It had been bought by Selfridge who intended to build a castle on it but was deterred by the prospect of the sea breaking through on the west side and making it an island. In my day it belonged to Bournemouth Corporation and was isolated and lonely but now suburban development reaches to its edge.

On August 24 my diary sings its praises: "I doubt if there is

another place in England where within half a mile one can take *praecox*, *ripae*, *vestigialis*, *littoralis* on sand dunes; *maritima*, *geminipuncta*, *straminea* and *phragmitidis* in reed beds; *agathina*, *suspecta* and *neglecta* on moors; *dissimilis* and *emutaria* in salt marshes and a lot of the oak, poplar and birch insects in the wood. All so near together in fact that one stretch of sugar will do for them all."

(To be continued)

BOOK TALK SEVEN. — J. & W. Davis, who had a natural history shop at 31-33, Hythe Street, Dartford, Kent, fifty and more years ago, produced a number of curious little field naturalists' handbooks which they published on the premises, including six on lepidoptera.

(1) *The Larvae Collector's Guide and Calendar* (1899), must have been quite popular for it ran to at least six editions. I have seen the first, fifth and sixth of these, but none of the others. The Davises are supposed to have had a locality on Dartford Marshes for that strange moth *Cucullia scrophulariae* D. & S. the Water Betony, and in their price list appended to the fifth edition (1907), specimens of this insect are quoted at 9d. each. (2) *Lepidoptera Collecting: a Manual of Instruction for the Use of the Young Collector*, was issued in two editions. The second of these which appeared in 1906, and the only one I have seen, consists of a frontispiece, three plates, five text figures and 42 pages of letterpress plus 20 pages of advertisements and a price list. Among the illustrations are some of entomological impedimenta including two peculiar oil collecting lamps. (3) *The Naturalist's Annual and Diary of Records and Captures for 1902*, gives the times of appearance of British macrolepidoptera. So far as I am aware, the only surviving copy of this book is in the Public Library at Dartford. (4) *The Macrolepidopterist's Calendar* (1909) comprises 176 pages of text plus 8 pages of advertisements, and is very much after the style of Joseph Merrin's *Lepidopterist's Calendar* (London, 1860; second edition, Gloucester, 1875), with the species in their different stages arranged under months according to their times of appearance.

J. & W. Davis also advertised having produced (5) a "Revised edition, with considerable corrections and additions", of Abel Ingpen's well known *Entomologist's Guide to Collecting, Rearing and Preserving British and Foreign Insects*; and, (6) *Localities for Lepidoptera*, together "with maps etc." I have seen neither of the latter and they are not represented in the Dartford Public Library, the libraries of the Royal Entomological Society, the British Museum (Natural History) or that of the British Museum (Bloomsbury). If anyone knows of the existence of copies of either items (5) or (6), I should be most interested to receive information on them. — J. M. CHALMERS-HUNT.

JOHN ABBOT'S LONDON YEARS

PART IV

By RONALD S. WILKINSON*

V. The departure for America

In his well-known biographical sketch of John Abbot, William Swainson wrote that "At an early age he was engaged by three or four of the leading entomologists of England, to go out to North America, for the purpose of collecting insects for their cabinets. After visiting several parts of the Union, he determined to settle in the province of Georgia, where he immediately began his researches."⁸⁶ Swainson's account is only superficially correct. He did not correspond with Abbot until 1816, and he was unaware of the precise circumstances of the elder naturalist's emigration. Inspired by Smeathman's efforts in Africa and the exotic specimens in the London cabinets, Abbot began to "entertain thoughts of going abroad to collect foreign Insects" (N). As he later remembered, "in the beginning of the Year 1773" he was "determined to come to America," and the only problem was "what part to choose." Although he spoke to a Frenchman who praised Louisiana highly, he had "met with a hist[ory] of Virginia painted in such glowing Colours" that he turned his thoughts there. The prospect of a shorter voyage to Virginia helped Abbot to make his decision.

Evidence in Drury's papers indicates that these events occurred earlier than the date recorded by Abbot many years afterward. On 20 November 1772 Drury wrote to Smeathman that "Young Abbot is going to Virginia on ye same purpose as yourself, he is to collect [for?]⁸⁷ the dealer in King Street who I imagine you well remember."⁸⁸ Various letters from Drury reveal the identity of the chief sponsor of Abbot's American venture. He was Thomas Martyn, who is now best known for a number of illustrated works on natural history, especially *The Universal Conchologist* (1784 [-1792]);⁸⁹ *The English Entomologist*, (1792 [-1793]);⁹⁰ *Aranei, or a Natural History of Spiders* (1793), derived from Albin and Clerck; and *Psyche: Figures of Non-descript Moths, and Butterflies* (1797).⁹¹ At the time, Martyn was a well-known Covent Garden specimen dealer, who first appeared in Drury's correspondence in 1770 as "a Man in London who buys and sells all sorts of natural curiosities." He had a continuing stock of American insects; one of his suppliers was Thomas James, a resident of New York who also furnished Drury with many of the specimens figured in the *Illustrations*. Drury first mentioned Martyn by name in the papers when the merchant paid a sum in 1772 to be sent to James for a shipment of insects.⁹² The

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business in King Street appears to have been profitable. Martyn eventually became one of the two best-known conchological dealers in London (the other was George Humphrey) after giving four hundred guineas for two-thirds of the shells brought back from Cook's last expedition.⁹³ (When he issued the prospectus for *The Universal Conchologist* in 1784, Martyn was still at 26 King Street, Covent Garden.⁹⁴ He soon moved to the Marlborough Street address better known from his later publications.)

The precise terms of Martyn's 1772 agreement with Abbot are unknown. Apparently he promised to purchase whatever natural history specimens the collector could ship from Virginia to London. Drury's correspondence does not identify other active sponsors, if indeed there were any except Drury himself, who certainly hoped to profit from the voyage. He principally wished insects, so he could hardly match or improve upon Martyn's wider proposal, and there is no hint in the sources of a joint subscription such as was raised to send Smeathman to Africa — even though it is possible that some of Drury's friends (such as Fothergill, who also craved American insects) wished to benefit indirectly from the new venture. Drury understood that Martyn was to be the initial recipient of entomological specimens from Virginia, but he did not hesitate to lend his departing friend whatever assistance he could in preparation for the voyage. Abbot eventually repaid him for his efforts in a way that the canny Drury surely anticipated.

However, most of the Georgian material which would grace the cabinets of Britain and Europe was to be sold by John Francillon, the jeweller who acted as Abbot's agent from the 1780s until his death in 1816. Swainson explained that "The late Mr. Francillon, whose magnificent collection of insects, which rivalled that of Drury, is still remembered, was his [Abbot's] chief friend and correspondent, through whose means and agency he procured large commissions from the British and Continental collectors, and different public museums, for Georgian insects."⁹⁵ Correspondence with Swainson and the Manchester manufacturer John Leigh Philips illuminates Francillon's methods of selling Abbot's specimens and watercolours.⁹⁶ So little is known of Francillon's activities before 1782 that it is unclear whether he and Abbot had met in London. Equally lacking are manuscript sources to document Abbot's transfer of allegiance from Martyn to Francillon.⁹⁷

The ornithologist John Latham was a direct recipient of Abbot's favours, and Drury was acquainted with Latham as early as 1772.⁹⁸ However, it is unlikely that Abbot knew Latham in England, or that Latham was more than casually aware of Abbot's activities before Francillon showed him a set of ornithological drawings and notes received from Abbot in 1792.⁹⁹ Apparently James Edward Smith obtained the watercolours and data for his collaboration with Abbot

through Francillon's agency; at any rate, when Abbot left England, Smith was a boy of twelve who was yet to turn his attention to natural history. William Swainson, who like Latham received materials directly from Abbot, was not yet born.¹⁰⁰ There is no decisive evidence that any of the British naturalists who were well-known friends, correspondents or collaborators much later in Abbot's life were also among his supporters when he left for America.

The Royal Society of London gave Abbot at least nominal assistance, perhaps through the urging of Joseph Banks, George Edwards, Solander or Fothergill, all of whom were Fellows. A letter from William Legge, Earl of Dartmouth and secretary of state for the colonies, to John Murray, Earl of Dunmore and governor of Virginia, provides the evidence: "The Royal Society having appointed Mr. John Abbot, to make researches and collections in Virginia in those branches of natural history & productions which are more particularly objects of their study and enquiry; I beg leave, at the request of the Committee of that Society for natural history, to recommend Mr. Abbot to your protection, and am commanded by The King to desire you will give him every countenance and assistance in your power in the prosecution of the commendable purposes of the Society."¹⁰¹ Such letters in behalf of naturalists travelling abroad were not uncommon, and they do not necessarily testify to a special 'appointment,' despite the explicit statement. The Society had granted these "letters recommendatory" since the seventeenth century. As one historian has explained, "their object was to request that all persons in authority abroad would kindly receive the bearer, who was desirous of cultivating science, and show him any attention in their power, particularly with reference to the nature of his scientific pursuits." The documents, which were issued to aid "intelligent persons, whether Fellows of the Society or not,"¹⁰² served (at least from the Society's viewpoint) to further its general aim of the improving of natural knowledge.¹⁰³ Abbot's recommendation, one of two written by Dartmouth on the same day to benefit overseas travellers at the Society's request, was sent directly to Dunmore.

Abbot sold his large cabinet of insects and his accumulated drawings early in 1773,¹⁰⁴ and had three smaller wainscot cabinets constructed for transportation to Virginia. He booked passage on the *Royal Exchange*, which was to sail to the James River in April. When the vessel was delayed, he secured employment through the recommendation of the dealer-naturalist George Humphrey, "making Drawings of Nat. history[,] shells &c. at a good price, on Vellum at a Guinea a piece" (N). Humphrey later had specimens from Georgia which were presumably collected by Abbot, but it is not known whether these were sent directly as the result of an agreement made in London, or were purchased from Martyn, Drury or

Francillon.¹⁰⁵ (The same problem exists with Georgian specimens in the cabinets of Banks, Lee of Hammersmith and other possible friends and acquaintances.)

In May Drury wrote in Abbot's behalf to two Virginia correspondents and suppliers, the minister Devereux Jarratt and the physician James Greenway, both of Dinwiddie County. He explained to Jarratt that Abbot was a "young Gentleman going to Virginia on purpose to collect the various articles in Natural History; in doing w[hi]ch he purposes to spend some months, perhaps Years, according to the success he meets with in the various departments of that pursuit. [*footnote*: The principal Articles he intends to collect are Birds, Plants, Insects -- Fishes, Animals &c and also Minerals, Fossills &c &c--] You mention. . . your refraining sending me any more Insects because you have met with few or none different from those you have already sent . . . Mr. Abbot may be very serviceable to you by pointing out those particular species that are scarce here & consequently valuable even tho you may have sent some of them already. And as his judgment may be relied on in that matter he may be able to save you some trouble and difficulty, on the other hand you may perhaps be of equal service to him by informing him where there are any places that afford curious Stones Minerals &c -- for as he is engaged in so general a pursuit, any information he can get of that kind will be very usefull to him." Drury informed Greenway, whose knowledge of botany was considerable, that Abbot's "principal Forte" had been "Insects & therefore he may stand in need of your help for collecting the other branches . . . As he has every thing to learn & seek out in pursuing the above design your assistance can probably save him much trouble & labour. . . . Mr. Abbot on the other hand will be able to improve your knowledge in Insects & thus together ye may promote the purpose of Natural History."¹⁰⁶

Drury's letters to Jarratt and Greenway confirm that Martyn and others who expected to gain from Abbot's collecting efforts hoped for a wide range of material. (In fact, he devoted most of his attention to insects and birds.) The letters indicate that the Virginian residence was meant to be temporary, much like Smeathman's sojourn in Africa. They also reflect the very limited experience which Abbot had in areas of natural history other than entomology. His friends did not consider this to be a serious impediment, for it was thought that Abbot would adapt quickly to his new profession. Drury was not alone in his opinion when he wrote to a friend in the country that "gr[ea]t Expectations are formed."¹⁰⁷

As Abbot's ship was still delayed, he continued to work at his temporary employment. A customer who was aware of his talents attempted to persuade him to postpone his departure for a longer time and undertake a further series of drawings. He recorded that the request "was to[o] late. One Morning I went to the Coffee

house to know when the Ship wou'd sale, was told she had sailed, but [I] might perhaps overtake her in the River"(N). Abbot was alarmed, as he had paid his passage and his baggage was on the vessel. He hired a post chaise, and with his family he pursued the *Royal Exchange* all the way to Deal, where he was able to board. The ship remained several days in the Downs before anchor was weighed on 13 July 1773.¹⁰⁸ Drury could finally inform Smeathman that "young Abbot is gone to Virginia to collect for Martin."¹⁰⁹

VI. From England to Georgia

When the *Royal Exchange* stopped at Madeira to take on wine, Abbot "walked about the Town & dined at a hotel." An attempt with his net amid the near-tropical exuberance of vegetation was unrewarded; although the day was fine he "did not meet with any Butterfly or Moth" (N). Aboard ship he became acquainted with the Goodall family, and decided to board at their home, approximately a hundred miles from the mouth of the James, rather than proceed to Dinwiddie County and present himself to Jarratt and Greenway. When the vessel reached the James River in September, Abbot and his new friends were taken upstream in a sloop as far as Jamestown, where they were able to hire chairs and proceed to the Goodall plantation in Hanover County (N). Abbot began to collect immediately. On 9 November he reported the results of his industry to Drury, who understood from the letter that the naturalist had already taken "570 species"¹¹⁰ of insects in Virginia. Drury commended the effort, urging Abbot to undertake rearing as part of his activities: "when you set about breeding you will find a numerous tribe of ye Lepidoptera that are unknown to us. -- The truth is Nobody here knows what that Country produces because Nobody has ever tried to obtain [its] Insects by that method."

Abbot was reminded to pursue other objects of natural history, "particularly the Mineralia. . . . the *Stones* of America also we are as ignorant of as the Insects & if you search diligently into that Class perhaps you may make discoveries of great importance." Drury provided a brief lesson about "stones," adding a word about "Fossills of various kinds," which he knew Abbot was "not unacquainted with. . . but I have no doubt Mr. Martin has already given you ample directions on that head so that what I have said may perhaps be unnecessary, however as I am ignorant on what terms you & he are connected let me add that if it does not break in upon them & you should meet with any of the above things I shall be very ready to receive any. . . upon such an equitable footing as may be beneficial to both of us." Drury's appeal for geological specimens was partially prompted by other reasons than his usual desire to further science while enriching his own collections. At the time he was also seeking gemstones and other suitable material to use in his recently expanded activities as goldsmith and jeweller.¹¹¹

Considering his close relationship with Drury, it is curious that Abbot had not yet revealed the exact details of his agreement with Thomas Martyn.

In his letter, Drury warned Abbot to avoid the political disputes which were rapidly polarizing the Virginians, because to carry out his design it would be "absolutely necessary to look with indifferent eyes on all parties whatsoever." The advice would soon be very useful. There was news of Smeathman and Fothergill, as well as the information that the Royal Society had "come to a resolution of making a great figure by getting a good collection of Natural History to w[hi]ch end they have wrote to all parts of the world where any speculative Men are to be found to collect the various articles in Nature for them[;] perhaps you may be applyed to for that purpose very soon."¹¹² No evidence has yet been found to indicate that Abbot was ever approached after his "letters recommendatory" were issued, or that he ever sent specimens to enrich the Society's cabinet.

Abbot continued to board with the Goodall family. He weathered a season of "fevers & fluxes" which ravaged the area, and began to collect again early in 1774. Although he was "much disappointed in not meeting with the variety of Insects" he expected during the warmer months, by late summer he had accumulated enough entomological specimens for an initial shipment to Martyn. One parcel arrived in London late in November, accompanied by letters from Abbot to his friends promising a larger box to follow. Drury wrote to Smeathman about the "pretty Coll[ectio]n" which he had obviously seen at Martyn's. Abbot was described as "certainly. . . exceeding industrious & will by next y[ea]r have sent home ye princip[a]l part of ye Ins[ect]s to be procured in Virginia as well phal[enas] as pap[ilio]s there being a great number of ye former in this Collect[io]n & in his grand one he writes word there are several hund[re]d Species."¹¹³

In his letter to Martyn, Abbot announced that he had almost decided to leave Virginia and move southward. His thoughts were influenced as much by the political situation as by his dissatisfaction with the extent of the entomological fauna. The colony was rapidly moving toward revolution. Lord Dunmore, the governor who had been directed to afford him protection and assistance, had dissolved the assembly, which in turn had met independently, adopted a boycott association, and proposed a general congress of delegates from the colonies. Impelled by his own purposes, Drury hoped that Abbot would go to Surinam. He wished to have more insects from there, and he told Smeathman that if only the eager Abbot would follow his advice, "Eng[lan]d will soon be stocked with ye produce of that Colony."¹¹⁴ To Abbot he extolled the virtues of Surinam: "you may live there as conveniently as at New York or any other City on the Continent & may go into the woods without any danger of Men or Beasts." Abbot was advised to engage

an agent in New York who could receive his South American collections, ship them to London, and remit the payments; it was "a matter absolutely necessary to be established, without which you cannot have any Intercourse with your Friends here in London."

Drury informed Abbot of the activities of Sir Ashton Lever,¹¹⁵ who had "the finest Collection of Birds in England," and who had just taken Leicester House, where he intended to establish a museum: "upon my mentioning to him a design if you should entertain such of going to Surinam, I make no doubt but he would . . . give you all possible encouragement to collect Birds & other animals." An account of Virginia minerals by Abbot was pronounced satisfactory. Drury also reported the results of his latest visit to King Street. Abbot had offered him duplicates from the initial parcel of insects: "in consequence thereof I rec[eive]d of Mr Martin 10 of ye Lepidoptera being those Species of w[hi]ch you sent 3 -- I could not reconcile it to myself to rob you of any Species where there was less than 3.-- I am exceedingly pleased with what you have sent & shall be more so I am confident with the grand Collection that is every day expected."¹¹⁶

The second parcel never reached London. As Abbot recalled, "the Ship was lost on the English coast, together with my Insects." Upon being informed of the tragedy, he was "much dispirited," and made a "resolution to return to England again, the times likewise becoming alarming." He was told that the captain of a ship bound for London would visit the Hanover County court house. The master did not appear (N), and Abbot's final decision was to remain in Virginia for another collecting season. In October 1774 the newly-formed Continental Congress had enacted legislation which directed, among other provisions, that the colonies should refrain from importing British goods after 1 December, and cease exports to Britain after 10 September 1775. There was strong sentiment in Virginia for the so-called "Continental Association." As the September deadline neared, Abbot readied another shipment containing his 1775 catch so as to be able to consign it on a vessel going directly to England. Once again the Fates had their way. As the "Notes" record, Abbot's parcel "was on board the boat in the River [being transported] to the Ship, when a terrible September storm arose in the night, and the boat was lost together with my Insects."

The destruction of another season's captures was hard to bear. Moreover, to a young Englishman with close ties to the mother country, the local situation was "now becoming very troublesome" (N). Dunmore had fled from the governor's 'palace,' the practical transfer of power was now complete, and the colony was in undisguised rebellion under the Committee of Safety.¹¹⁷ For some time Abbot had been acquainted with his host's cousin, William Goodall, "who had lived in Georgia with his Relations. . . .

he talked much in praise of Georgia, & wanted to go back there but had not the means to bear his Expences." Now, "hearing that Georgia had not then joined the other Colonies," Abbot joined with his friend and several Goodall family members, furnishing the necessary cash himself. The little party left for Georgia early in December 1775. After travelling overland for two months and overcoming the problems of a harsh winter, Abbot and his comrades finally reached their destination, about thirty miles below Augusta. A log house was erected for William Goodall, and Abbot took up board with the family "for some time after" (N).

The twenty-four-year-old collector was now in Georgia, where, but for a few exceptions, he would remain for the rest of his long life. Ironically enough, considering the immediate reason for his departure from Virginia, he arrived just in time to witness the overthrow of the royal government and the beginning of war in another colony. Georgia had tarried far behind the more radical centers of revolutionary sentiment, but now events were rapidly moving toward a conclusion. While Abbot was on his journey, the Georgia Council of Safety had arrested the colonial governor, James Wright, and other leading tories. In March 1776, a month after Abbot's arrival, hostilities began, Wright and his friends escaped, and British authority was at least temporarily removed.¹¹⁸ When concluding his "Notes," Abbot declared that "as the first Years of my living in Georgia, contains much more of Adventure, than the former part of my life, and continued through such bad & terrible time[s], that I often reflect, upon the goodness of providence, in bringing me safely through them."¹¹⁹ Royal troops returned to Georgia at the end of 1778, occupying Savannah. By mid-1780 most of the state, including Augusta, was once more under British control. For a year there was savage guerilla action in the back country, until a 1781 offensive by American troops reduced the Crown's authority to the coastal area. In summer 1782 the British finally evacuated Savannah, allowing Georgia to recover from the hardships of war.

Abbot could now pursue his overseas transactions without undue difficulty. None of the specimens which he was to send from Georgia were ever lost (N). Although a number of Lepidoptera which he surely collected were illustrated in Thomas Martyn's *Psyche* (1797), postwar shipments to Martyn cannot be documented because the papers of Abbot's principal sponsor appear to have been destroyed, and Drury's surviving correspondence does not refer to further parcels for the King Street dealer. Drury was well rewarded for his years of assistance. The goldsmith's provenance notebooks record the acquisition of several insects from Abbot during the war years 1780 and 1781; over a hundred specimens, chiefly Virginian, in 1784; a substantial collection of nearly five hundred Georgian insects in 1785; and smaller shipments in 1786

and 1789, "Dru" Drury died in 1803, and when his cabinet was dispersed during the famous auction held a year and a half later, many insects furnished by Abbot found their way into other collections.¹²⁰

By the time of Drury's sale, Abbot's specimens had been valuable commodities for several decades. The unassuming naturalist's career had nearly completed a second phase, the subject of another essay. Abbot had established his primacy, through Francillon's agency and the publication of his watercolours and notes by Smith, as the most knowledgeable collector and observer of insects, as well as the most talented entomological illustrator, resident in North America. His ornithological drawings had already gained attention. John Abbot had fulfilled the promise of his London years, and his future contributions to the study of natural history in America would more than justify the "gr[ea]t expectations" of his early friends.

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NOTES

⁸⁶Swainson, *Taxidermy*, 99.

⁸⁷The MS. is torn away.

⁸⁸Drury to Henry Smeathman, 20 November 1772, Drury letterbook, 254, BM(NH).

⁸⁹The date span of *The universal conchologist* is a matter of interpretation. If one accepts the final plate of medals as a bibliographical necessity to complete the work, the terminal date is 1792, although the conchological portion was completed by 1787. Surely the first two so-called editions should be termed issues.

⁹⁰Ronald S. Wilkinson, "A bibliographical description of Thomas Martyn's *The English entomologist* (1792)," *Entomologist's Rec. J. Var.* 90 (1978), 263-264; Wilkinson, "The date of Thomas Martyn's *The English entomologist*: 1792 or 1793?," *Entomologist's Rec. J. Var.* 93 (1981), 135.

⁹¹The identity of "Mr. Martin," the King Street, Covent Garden dealer, with

Thomas Martyn, writer of natural history books, has not been previously announced, despite considerable evidence in eighteenth-century sources. Jonas Dryander identified Thomas Martyn as a "mercator rerum naturalium Londini" in *Catalogus bibliothecae historico-naturalis Josephi Banks* (London, 1796-1800), 5: 347. William G. Maton and Thomas Rackett also knew that Martyn was a dealer; "An historical account of testaeological writers," *Trans. Linn. Soc. Lond.* 7 (1804), 203. Dance characterized Martyn as "a knowledgeable dealer, versatile writer and gifted artist," and described his activities in buying and selling shells, quoting from eighteenth-century correspondence; *Shell collecting*, 99-100. The usual secondary sources, such as Martyn's entry in the *Dictionary of national biography*; William H. Dall, "Thomas Martyn and The universal conchologist," *Proc. U.S. natn. Mus.* 29 (1906), 415-432, and the continuation, "Supplementary notes on Martyn's Universal conchologist," *Proc. U.S. natn. Mus.* 33 (1908), 185-192; Harry B. Weiss, "Thomas Martyn, conchologist, entomologist and pamphleteer of the eighteenth century," *Am. Collector* 3 (1926), 57-62, and Weiss, "Thomas Martyn's 'English entomologist,'" *Jl N.Y. ent. Soc.* 46 (1938), 321-325, do not mention Martyn's career before 1784. The earliest of his presently recorded publications was *Hints of important uses, to be derived from aerostatic globes* (London, 1784), written at the King Street address as part of the furor of speculative pamphlets which accompanied the earliest balloon ascensions. The prospectus for *The universal conchologist* was published in the same year. Martyn's activities as an occasional patriotic and nationalistic pamphleteer are revealed by *The soldier's and sailor's friend* (London, 1786); *A dive into Buonaparte's councils* (London, 1804); and *Great Britain's jubilee monitor and Briton's mirror* (London, 1810). Martyn is said to have been a native of Coventry, and presumably he was alive in 1814, the date of composition of his entry in the *Biographical dictionary of living authors of Great Britain and Ireland* (London, 1816), 226, which described him as "an ingenious naturalist in London." He has traditionally been confused with the Cambridge botanist Thomas Martyn (1735-1825).

⁹² Martyn was first mentioned by Drury in a letter to Sepp, who wished a specimen of the saturniid *Actias luna* (L.), figured in the *Illustrations*, 1, plate 24. Drury wrote that the "Man in London" had "one of this sort, but he will not dispose of it under seven Shillings & sixpence, a price I would not choose to give him unless I had your authority"; Drury to Jan C. Sepp, 9 November 1770, Drury letterbook, 217, BM(NH). Drury's *luna*, and apparently Martyn's, had come from Thomas James. Considerably later, Drury wrote James that "I have this day seen Mr. Martin who I find had not remitted you the money for the Collection you sent him but he has this day paid it to me & I have put it in the Box with my own"; Drury to Thomas James, 21 April 1772, Drury letterbook, 247, BM(NH).

⁹³ Dance, *Shell collecting*, 100.

⁹⁴ The excessively rare Martyn prospectus is illustrated by Dall, "Supplementary notes," 188.

⁹⁵ Swainson, *Taxidermy*, 99.

⁹⁶ The Swainson Correspondence, Linnean Society of London, includes letters exchanged with William Swainson about Abbot, and Francillon's letters to John L. Philips, Add. MSS. 29533, British Library, contain numerous references to Abbot; see fn. 49 above.

⁹⁷ Apparently Francillon's papers have not survived. He was probably born in 1744, and certainly died in 1816, so he was nearly thirty when Abbot left for America. Nothing of substance has been written about Francillon.

⁹⁸ Drury to John Latham, 10 February 1772, 31 July 1772, Drury letterbook, 241, 250, BM(NH). Latham (1740-1837) was a physician at Dartford, Kent. Frederick C. Sawyer, "Notes on some original drawings of birds used by Dr. John Latham," *J. Soc. Biblphy nat. Hist.* 2 (1949), 173-180, and Simpson, "The artist-naturalist John Abbot," mention Latham's use of Abbot's information. There is a useful entry in the *Dictionary of national biography*.

⁹⁹ John Francillon to John L. Philips, 3 October 1792, Add. MSS. 29533, f. 75r-v, British Library.

¹⁰⁰ Swainson (1789-1855) sought Francillon's assistance in obtaining Abbot's insects between 1813 and 1816. Subsequent letters exchanged directly with Abbot are in the Swainson Correspondence, Linnean Society of London, and in the Alexander Turnbull Library, Wellington, New Zealand.

¹⁰¹ Lord Dartmouth to Lord Dunmore, 4 August 1773, Colonial Office Class 5, 74, 283, Public Record Office, London; transcript in the Manuscript Division, Library of Congress, Washington, D.C.

¹⁰² Charles R. Weld, *A history of the Royal Society* (London, 1848), 1: 224-225.

¹⁰³ I am indebted to N. H. Robinson, Librarian of the Royal Society of London, for his investigations in the Society's archives, and his elucidation of favours extended to naturalists.

¹⁰⁴ Abbot's disposal of his early drawings before his departure for America led to their location in Britain until they were sold to foreign purchasers early in the twentieth century.

¹⁰⁵ Swainson, *Taxidermy*, 219-220, wrote that "Mr. Humphrey, for many years, was the chief commercial naturalist in this country; and from his father, who was in the same profession, he inherited immense collections both in conchology and mineralogy. . . his company was sought for by all the great collectors and naturalists of his time. . . he was my first preceptor and encourager in the study of nature." There are important references to Humphrey in Whitehead, "Emanuel Mendes da Costa," and Dance, *Shell collecting*; see also John W. Jackson, "A letter from George Humphrey to William Swainson," *J. Conch., Lond.* 20 (1937), 332-337. Drury knew Humphrey at least as early as 1767, when the dealer was living in St. Martin's Lane. I am grateful to Marcus B. Simpson for the information that some of Humphrey's Georgian specimens were mentioned by Latham in the *Index ornithologicus* (London, 1790-1801) and *Supplement II to the general history of birds* (London, 1801).

¹⁰⁶ Drury to Devereux Jarratt, 5 May 1773, Drury letterbook, 269-270, BM(NH); Drury to James Greenway, 5 May 1773, *ibid.*, 270. Greenway was a correspondent of Linnaeus; Edward A. Wyatt, "Dr. James Greenway, eighteenth century botanist," *Tyler's q. hist. geneal. Mag.* 17 (1936), 210-223.

- ¹⁰⁷Drury to Thomas Bolton, 24 June 1773, Drury letterbook, 276, BM(NH).
- ¹⁰⁸*Daily advertiser* (15 July 1773), 1; *Lond. chronicle* (13-15 July 1773), 54.
- ¹⁰⁹Drury to Henry Smeathman, 4 July 1773, Drury letterbook, 279, BM(NH).
- ¹¹⁰The count is in Drury's words. Perhaps Abbot meant 570 specimens rather than species.
- ¹¹¹Drury gave up his trade as a working silversmith and entered into partnership with Nathaniel Jefferys, goldsmith to the Queen. Their fashionable shop was located in the Strand. Drury received a joint appointment as Queen's goldsmith in 1772. Jefferys gradually retired and in 1773 Drury was pursuing the business alone as a goldsmith and jeweller. The events are documented in his letterbook, BM(NH).
- ¹¹²Drury to Abbot, 10 April 1774, Drury letterbook, 315-316, BM(NH).
- ¹¹³Drury to Henry Smeathman, 28 November 1774, Drury letterbook, 334, BM(NH). Drury enclosed a letter from Abbot to Smeathman.
- ¹¹⁴*Ibid.*
- ¹¹⁵Lever (1729-1788), a wealthy dilettante attracted to natural history, moved his collection from Alkrington, near Manchester, to Leicester House, Leicester Square, in 1774. The "Leverian Museum" was one of London's attractions for many years; Dance, *Shell collecting*, 109-110; Allen, *The naturalist in Britain*, 68-69; and Lever's entry in the *Dictionary of national biography*.
- ¹¹⁶Drury to Abbot, 28 November 1774, Drury letterbook, 333a-334a, BM(NH). Drury's provenance notebooks at Oxford University reveal that he received more than the ten Lepidoptera from Abbot's 1774 shipment. Twenty-two Coleoptera and three insects of other orders are identified as from the Abbot parcel. The notes which identify two beetles from Antigua as in Abbot's 1774 shipment are surely in error, unless Abbot obtained the specimens at second hand.
- ¹¹⁷Hamilton J. Eckenrode, *The revolution in Virginia* (Boston and New York, 1916) is still the best history of the war for American independence in that former colony.
- ¹¹⁸The war in Georgia is ably chronicled by Kenneth Coleman, *The American revolution in Georgia, 1763-1789* (Athens, Ga., 1958), and Coleman, *Colonial Georgia: a history* (New York, 1976).
- ¹¹⁹According to Bassett, "Georgia records of John Abbot," the naturalist served in the Continental army during the war. The records she cites almost certainly refer to another John Abbot, who was illiterate. Elsa G. Allen discovered the confusion but did not publish the results of her research; Elsa G. Allen Papers, Cornell University Archives.

120. The sale was held in the rooms of King & Lochee, London auctioneers, on 23, 24 and 25 May 1805. Many of the leading British naturalists and collectors were in attendance. A copy of *A catalogue of the most capital assemblage of insects probably ever offered to public sale* ([London,] 1805), annotated with prices and names of purchasers, is preserved in the Library, Entomological Department, BM(NH). The total amount realized was £903/13/6.

Notes and Observations

CURATE'S OVUM. — Why do we entomologists persist in using the word *ova* when we mean *eggs* or, worse, that horrible word *ovipositing* instead of *egg-laying*? I can think of no other subject or branch of science that does so; birds do not lay *ova* and it would be a very pedantic person indeed who orders a fried ovum for his breakfast. Perhaps it is to be consistent with *larva* and *pupa* but these words are used for special forms that are peculiar to insects and their English equivalents are cumbersome and not precise; except in matters of detail there is nothing special about an insect's egg so why do we have to call it by a fancy name?

Let's face it: it is a legacy of a bogus intellectual snobbery which is unworthy of today's entomologists. It may, just *may*, be necessary for some special reason to refer to ovum or ova but the occasions will be rare; at all other times we should eschew out-moded jargon and say what we mean in plain English. — Lt. Col. W. A.C. CARTER, Briarfields, 4 Sandels Way, Beaconsfield, Bucks.

BASE MEDIUM FOR SPECIMENS TO BE FREEZE-DRIED. — With reference to the item by Colin W. Plant in Vol. 96 Nos. 5/6 I also have found that Plastazote deforms when in an Edwards EF2 freezer-drier. A satisfactory material is Kappa Board. This is a light weight display board consisting of a rigid foam sandwiched between white card surfaces, it is available in 3.5, 5, 10 and 15mm thicknesses. I usually use the 15mm. Satisfactory setting boards for micros can be produced by using a scalpel to make two cuts through the card of one side, the width of the required groove apart, and then with care peeling of the strip of card from the foam. The foam in the resulting groove can then be cut out to the depth required or, more simply, depressed using the reverse end of forceps. — D. H. HALL-SMITH, Assistant Keeper, Biology, Leicestershire Museums, Art Galleries & Records Service, Leicester LE1 6TD.

A FIRST YEAR IN YORKSHIRE. — My first surprise was the relative abundance of the Juniper Carpet (*Thera juniperata* L.) at the kitchen window of my York house. A total of 22 were seen at light with 14 on one evening (20th October 1982). Whilst cutting the grass on September 29th a pale geometer flitted across the lawn at dusk. A back hander to the ground revealed a Vestal (*Rhodometra sacra* L.). The weather consisted of strong southerly gales.

In 1983, the excellent late summer produced an abundance of visitors to the study light. Northern Spinach (*Lygris populata* L.)

was unexpected as I had assumed it to occur on hills or old woodland, not the Vale of York. Clouded Yellows (*Coleus croceus* Geoff.) were seen in Wharfedale where it was good to find larvae of Coronet (*Craniophora ligustri* D. & S.) on ash and find both Heath Rivulet (*Perizoma minorata* Tr.) and Barred Carpet (*Perizoma taeniata* Steph.) not uncommon locally, though again the Grey Mountain Carpet (*Entephria caesiata* D. & S.) was hardly expected by a river in a valley bottom.

Larvae of Fox (*Macrothylacia rubi* L.) and Ruby Tiger (*Phragmatobia fuliginosa* L.) (northern form) were fairly common in early summer. It was good to see Dotted Rustic (*Rhyacia simulans* Hufn.) at buddleia in York and Plain Clay (*Amathes depuncta* L.) at sugar in Wensleydale. As I did very little in 1983 these observations bode well for the future. — M. R. BRITTON, 67 Bramley Garth, Appletree Village, York, YO3 ONQ.

MELANIC IDEA BISELATA HUFN.: SMALL FAN-FOOTED WAVE. — Several melanic *I. biselata* were again taken in 1982 — an average of three or four have been noted annually — from our Ewingswode trap in the Monkswood NNR (Site No. 277, O.S.GR. TL200 797). run by Mr. J. N. Greateorex-Davies. These aberrations vary in shade from suffused smokey grey over the entire wings to very dark grey with submarginal bands of the normal ground colour. — A. M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Hertfordshire. [Mr. Riley has sent us a good coloured photo of four of his *biselata*: (1) normal; (2) ab. *fimbriata* Steph.; (3) & (4) melanic ab., Monks Wood, 12 & 27.7.1980. Reference to the RCK collection in BMNH shows the latter two are referable to ab. *griseata* Priessecker, of which there are eight examples in that coll. five of which are localised as from: Pallaskenry, Limerick, 1977; Monks Wood, Hunts, 1976; Polegate, Sussex, 1924; Bentley, Suffolk, 1897; Watergate, Hants, 1898. — J.M.C.-H.]

CALOPTERYX SPLENDENS (HARRIS) (ODONATA: CALOPTERYGIDAE) RECORDED IN CENTRAL LONDON. — I previously reported the sighting of a male *Calopteryx virgo* (L.) in central London (*Ent. Rec.* 94: 246). The second British member of this genus can now be recorded from the capital: A dead male of *C. splendens* was found on the pavement of West Halkin Street, SW1, (TQ 282794), on the morning of 30th July 1984, having presumably been hit by a vehicle. A nearby breeding site would seem somewhat remote, however, the outflow of the Serpentine Lake in Hyde Park was investigated later that day; no other examples were seen. It would seem likely, therefore, that this specimen was a casual vagrant. The occurrence of both British members of this genus in central London, suggests that, the males at least, wander some distance from their breeding sites. — A. P. FOSTER, c/o The Nature Conservancy Council, 19/20 Belgrave Square, London, SW1 8PY.

OBSERVATIONS ON THE GARDEN TIGER: *ARCTIA CAJA* L. —

In 1975, I had some wild larvae of this moth that were parasitised by a small ichneumon. Curiously, one of these larvae, after producing four or five parasitic maggots, pupated successfully and in due course a perfect moth emerged. Did the ichneumon fail for some reason to deposit its quota of eggs into the host larva, owing perhaps to having been disturbed while ovipositing? Are there other similar cases on record of survival by a parasitised larva?

A further observation concerns a female *A. caja* that I reared which laid the huge number of 1,584 eggs. These were laid in eleven batches in the following order: 306, 337, 141, 233, 200, 63, 95, 112, 63, 23 and 11. One wonders if this is a record number of eggs for this species to deposit. G. BAPTISTE, 26 Comb Paddock, Westbury-on-Trym, Bristol BS9 4UG.

SPRING APPEARANCE OF *MACROGLOSSUM STELLATARUM* L.

— M. Parsons wonders whether an April example of this Hawkmoth may not have hibernated (Vol. 96: 96). Further south in its range it enters buildings in the autumn in order to hibernate, but "this hibernation is a restless phase, for on sunny days the moth often tries to leave the house and may be seen trapped on windows" (quote from my *Lepidoptera Iraq*, 1957:p.47). If such behaviour has been noted in East Sussex it would indicate an affirmative answer to Mr. Parsons' question. — E. P. WILTSHIRE, Wychwood, High Road, Cookham, Berks.

BARRETT'S MARBLED CORONET: *HADENA LUTEAGO* BARRETTII DOUBL. IN CARDIGANSHIRE. — Two males of this species were taken in the Rothamsted Insect Survey light traps at Aberporth and Tregaron during June and July of 1983. The first, on 25th June, at Tregaron (Site number 331, O.S. grid ref. SN 687 618) was probably most surprising as this site is some 12 miles inland and well north of the species' distribution as shown in Vol. 9 of "The Moths and Butterflies of Great Britain and Ireland" (Heath, J. & Emmet, A. M. 1979). The second specimen was caught in our trap at Aberporth (Site number 440) on 5th July and again is further north than the species has been noted previously. Both specimens were quite badly worn but their identities were confirmed by my examination of their genitalia.

Our thanks are extended to Mr. G. Williams and Commdr. E. C. Verge for their co-operation in running the trap at Aberporth and Mr. I. J. L. Tillotson who operates the trap at Tregaron and identifies all but the most awkward specimens from both sites. — A. M. RILEY, Rothamsted Insect Survey, Entomology Department, Rothamsted Experimental Station, Harpenden, Hertfordshire.

AN UNUSUAL PUPATION SITE FOR *DIURNEA FAGELLA* D. & S. (LEP.: OECOPHORIDAE). — While walking in Swanton Novers N.N.R. (E. Norfolk, TG 011316) on 16 April 1984, I collected a loosely spun cocoon attached to the upper surface of a half-eaten

rhododendron leaf. The idea of a caterpillar which could control this invasive alien was very exciting and I was delighted when a strange moth emerged on 19 April. My difficulties in naming the specimen were resolved when a friend suggested it might be a female *Diurnea fagella*. The caterpillar of this common species usually feeds on trees, such as beech, and pupates on the ground among leaf-litter. It appears that this particular individual fell from the canopy to land on the rhododendron leaf. Whether it then spun its cocoon in the belief it had reached ground level, or whether it ate some of the leaf and thus altered its usual behaviour is difficult to say. In either case the rhododendron will continue to thrive!

I thank the Nature Conservancy Council for permitting the visit to Swanton Novers. I am also indebted to Michael Hall for suggesting an identity for the specimen which is now in this museum's collections. — A. G. IRWIN, Castle Museum, Norwich, Norfolk, NR1 3JU.

INSECTS NOT IN A MOLE'S NEST. — ON 16 May 1981, while searching under stones in a small dry ditch alongside of a sandy track near Maidcross Hill, Cambridgeshire, I uncovered a single histerid beetle which recently proved to be *Grammostethus* (nee *Hister*) *marginatus* (Erichson). Until 1907 *G. marginatus* was considered a very rare beetle, but after Joy's researches in animal and bird nests (1906, *Entomologist's mon. Mag.* 42: 198) it was subsequently found in a mole's nest (Footnote, 1907, *Entomologist's mon. Mag.* 43: 63) and is now known to be widespread in them. The discovery of my specimen would only be of passing interest as an example of a specialised insect occurring in an unusual place, but for the fact that I had seen another mole's nest insect earlier the same day. At Wicken Fen, the flea *Histrichopsylla talpae* (Curtis) was rather plentiful in heaps of cut sedge refuse. In mid-May, the young moles have only just been born, and the nest is in its prime for the insects that live in it. It seems rather odd that it should be just at this time that these two unrelated but co-habiting specialised insect species should both be taken away from their normal habitat. — RICHARD A. JONES, 29 Dean Road, Willesden Green, London, NW2 5AB.

LARVAE OF MIGRANT HAWK-MOTHS IN KENT. — On 3 September 1984, a larva of the Convolvulus Hawk-moth, *Agrius convolvuli* L., was brought to me. It had been found crawling across a garden lawn at East Malling and it went down into peat the following day. A search of an area of bindweed at the side of the lawn revealed frass but no more larvae. During the previous week eight mature larvae of the Death's-head Hawk-moth, *Acherontia atropos* L., were found feeding on potato foliage at Aylesford. — M. A. EASTERBROOK, 26 Orchard Grove, Ditton, Maidstone, Kent.

EILEMA GRISEOLA HBN.: DINGY FOOTMAN AND COMACLA SENEX HBN.: ROUND-WINGED MUSLIN IN N. W. KENT. — Chalmers-Hunt (*Lep. of Kent*, 1962-1981) gives the present status of these two species in N. W. Kent as extinct. *E. griseola* was thus last observed for the area on the Greenwich marshes, at Lee and at Eltham swamp in 1865. *C. senex* was also found at Lee, where it is reported to have disappeared about 1878, and it was observed on the Dartford marshes in 1889. Subsequently, the nearest colonies of these species have been to the east around Gravesend, the last record being for a specimen of *griseola* in 1914.

Two specimens of *E. griseola* have appeared at my garden m/v light at Dartford; on July 25th, 1972 and Aug. 21st., 1984. In my collection I have a specimen of *C. senex* similarly taken on Aug. 3rd., 1971. These records suggest that both species exist precariously in neighbouring Joyden Wood, a damp woodland largely on a thick deposit of clay of the Eocene Thanet Sand, where *E. lurideola* Zinck. and *E. complana* L. occur commonly, and *Mitochondria miniata* Forst. seems to be increasing in numbers. — B. K. WEST, 36 Briar Road, Bexley, Kent.

ACHERONTIA ATROPOS L.: DEATH'S-HEAD HAWKMOTH IN KENT. — On 28th August 1984, Mr. P. Hayes showed me a large larva he had found feeding on potato growing in his allotment garden at Farnborough, Kent. This proved to be a huge, final instar *atropos*. A visit to the allotment the next day revealed possible feeding of another larva (stripped stalks and substantial frass pellets), but no further insects were seen. — PAUL SOKOLOFF, 4 Steep Close, Orpington.

Current Literature

A List of Butterflies and Moths Recorded in Cornwall 1950-1983 (excluding the Microlepidoptera) by Dr. F. H. N. Smith. 16pp., 4to., stiff wrapper. Cornwall Trust for Nature Conservation. 1984. Obtainable from the author, "Turnstones", Perran-coombe, Perranporth, TR6 0HX. Price £1.

This list is primarily intended for naturalists who have not made a special study of the lepidoptera, but who wish to know if a species they have discovered is unusual or rare. The 555 species of macrolepidoptera listed are arranged alphabetically under their vernacular names followed by their scientific names and authors, and with the addition of the numbers allotted to them in Bradley & Fletcher, *Recorder's Log Book* (1979). There is an indication with each species of its status in the County. There are also brief notes with some species, especially the rarer immigrants, but the 1975 records for the Lizard of *Trichophtusia ni* Hbn., *Mythimna loreyi* Dup. and *Hyles livornica* Esp. (*Ent. Rec.*, 87:276) are not included.

The present list could be the forerunner of a much more ambi-

tious project. Dr. Smith, who is the C.T.N.C. Recorder for Lepidoptera, tells me he is pretty sure there is enough material available to make a start on a definitive account of the whole of the lepidoptera of Cornwall. We therefore earnestly hope that this can soon be undertaken, when one considers the richness of the County, and that no such work has appeared since the publication in 1906 of Prof. James Clark's Lepidoptera of Cornwall in the Victoria County History. — J.M.C.-H.

The Moths and Butterflies of Great Britain and Ireland, Volume 10. Noctuidae (Part II: Cuculliinae to Hypeninae) and Agaristidae. Editors: **John Heath** and **A. Maitland Emmet**. Assistant editors: **D. S. Fletcher**, **E. C. Pelham-Clinton** and **W. G. Tremewan**. Artists: **Brian Hargreaves**, **Maureen Lane** and **Brenda Jarman**. 459pp., 23 text illusts. (of 89 figs.), 226 distribution maps, 13 coloured plates (of 589 figs.), 100mm. x 150mm. Harley Books, Martins, Great Horkesley, Colchester, Essex. 1983. £40.

This is the third volume to be issued of this projected series of 11, intended to cover the whole of the British lepidoptera. The book begins with an editorial preface, and a chapter of considerable interest by R. F. Bretherton on "The Incidence of Migrant Lepidoptera in the British Isles" (pp.9-34). Included in the latter is a list of 175 species of Pyraloidea and Macrolepidoptera believed to be immigrants to the British Isles placed in eight separate categories according to status, and a bibliography of 53 items. Thence follows the main part of the work or systematic section, printed in double column, being the completion from volume 9 of the Noctuidae (with 422 bibliographical references), by R. F. Bretherton, B. Goater and R. I. Lorimer (pp.35-413), and the Agaristidae by R. F. Bretherton (p.414). The text concludes with two indices: one, a general index (pp.449-456), the other, an index of host plants (pp.456-459). There is a loose corrigenda slip.

As in volumes 1 and 9, keys are provided to all species (imagines) excepting those of doubtful British status. Keys to the subfamilies (imagines) of the whole of the Noctuidae appeared in volume 9, and so are not repeated here. Detailed descriptions are given of the imago and early stages (when known) of most of the 297 species treated in this volume. In order to assist identification with species of similar appearance, the critical differences are high-lighted in some cases, by the addition of an excellent series of drawings, by Maureen Lane and Brenda Jarman, of the genitalia and wing characters. In general, variation in the imago is covered as fully as in the previous volume.

We have noticed the following important errors or omission of published records in the text. Errors: P. 54 *C. platyptera*

14 (not 10) September 1896 (*Entomologist*, 29:319). P.71 *L. furcifera suffusa* . . . opposite Tintern on 31 (not 13) March 1907 (*Entomologist*, 40:297). P. 72 *L. lamda* Lewes, Sussex in 1873 (not 1875). P.231 *L. dumerilii* Sussex 10 September 1936 (not 1935) Wynn (*Entomologist*, 69:290 and *Ent. Rec.* 48:133). P.257 *A. neurica* (Not at Pett Level), but near the old gas works on Pevensey Marshes, which is nearly 20 miles away (*Ent. Gaz.* 2:244). P.310 *E. bankiana* Hailsham, Sussex on 25 June (not May) 1953 (*Ent. Gaz.* 7:91). P.301 *H. nubigera* Iwerne Minster on 9 (not 5) May 1958 (*Entomologist*, 93:217). P. 308 *L. deceptor* Playden 22 (not 25) June 1965 (*Ent. Gaz.* 16: 174). P. 301 *H. scutosa* Aviemore 4 (not 6) August 1960 (*Ent. Rec.* 72:216 and *Entomologist*, 95: 210). P. 326 *C. chalcites* Insh 10 (not 20) October 1978 (*Ent. Rec.* 91:91). Dovecourt 25 (not 29) September 1978 (*Ent. Rec.* 92:62). P. 328 *C. limbirena* Bradwell-on-Sea 27 (not 29) September 1951 (*Entomologist*, 85: 156) & Firmin et al. *Lep. Essex* (1975: 91). P. 331 *D. orichalcea* Polperro 22 (not 20) August 1960 (*Entomologist*, 95:210). P. 335 *M. confusa* Bishopsteignton on 4 (not 7) July 1962 (*Entomologist*, 97:126). P. 367 *C. alchymista* Hailsham 4 June 1875 (not 1865) (*Entomologist*, 20:325). P. 373 *T. exsiccata* Aylesford (not Ashford) (C.-H., *Butts. & Moths of Kent*, 2:339). P. 388 *H. obesalis* Paignton on 5 (not 8) October 1908 (*Entomologist*, 50:44 & 79: 212). Omissions: from Pratt, *Lep of Sussex* (1981). *L. zollikoferi* Horsham, Sussex 28 September 1912, Price. *E. bankiana* Fairlight, East Sussex 30 June 1976, Wright. *D. orichalcea* Walberton, West Sussex on 16.ix.76, 11.viii.78, 16.vii.78, 23.viii.78, 4.ix.78 and 18.ix.78.

The 226 distribution maps are founded on data cards held at the Institute of Terrestrial Ecology, Biological Records Centre, and are stated to include all records received up to the end of 1980, and later for a few species. In 210 of these maps, solid dots represent post-1960 records; open circles earlier records; crosses unconfirmed records of 'critical' species; and asterisks records assumed to be of migrants. Although we are told that these maps must be regarded as only provisional (see p.35), they are at least of interest as giving an overall impression of a species' distribution, notwithstanding they may be deficient in other ways. The remaining 16 maps are of the kind devised by R. F. Bretherton, with numbers or approximate numbers recorded graded in vice-counties.

The 589 coloured drawings by Brian Hargreaves are on 13 plates gathered together at the end, and have for convenience the captions facing them along with the appropriate page references. These illustrations are for the most part printed natural size, but in plate 13, which includes the *Eublemma*, *Earias*, *Nycteola*, *Schrankia*, *Hypenodes*, *Phytometra*, *Rivula*, *Athetis* and *Copipanolis* species, the figures are reproduced x2 owing to the relatively small size of many of the moths in these genera.

We are glad to see that the contributions to the main text are of the same high standard as before. That by R. F. Bretherton is

particularly notable. Also encouraging is the marked improvement in the general quality of the coloured illustrations when compared with those of the previous volumes. Now that publication of this work has been taken over by Harley Books, whose head, Basil Harley, is himself a lepidopterist, we have high hopes for the future success of this important series — J.M.C.-H.

World Palaeontological Collections by **R. J. Cleevely**. 365pp., 4to. British Museum (Natural History) and Mansell Publishing Ltd. 1983. £50.

This is essentially an index of fossil and mineral collections worldwide arranged alphabetically under the names of those who formed them and mainly, if not entirely, limited to material in public institutions,¹ though it does not claim to be a complete survey or summary of such assemblages. Pp.1-37 include a history of earlier guides to geological collections, a history of fossil collecting and an impressive series of bibliographies classified according to subject and totalling some 570 items. Pp.38-323 form the main body of the work, that is, the "Alphabetical Index of Collectors", printed in double column, their names clearly shown in bold type with most having the locations of their collections indicated by the place name followed by the name of the institution, the nature of the material held and frequently with some additional information of interest including biographical details, dates and published references. Pp.324-365 consist of an index of institutions with their addresses followed in each case by the names of the persons whose collections are held there.

For the palaeontologist this book is of course of prime concern in so far as it relates to fossil insects, since it gives details of a number of these together with their locations. However as there is no subject index, the following names of those for which particulars of their fossil insect collections appear in this work may be of interest. J.E.A.'Court Smith (1814-1900); G. C. Berendt (1790-1850); J.B.A. de Boisduval (1799-1879); P. B. Brodie (1815-97); T. D. A. Cockerell (1866-1948); G. W. Colenutt (1862-1944); J. Deichmuller (b. 1854); Dunstan (fl. 1920); C. Evans (1821-86); Fayol (fl.1885); Rev. O. Fisher (1817-1914); A. Handlirsch (1865-1935); R. W. Hooley (1865-1923); J. F. Jackson (1896-1966); A. S. Kennard (1870-1948); T. H. Pincombe (fl. 1925); A. Pouillon-Williard (fl.1890); S. H. Scudder (1837-1911); G. Statz (1894-1945); R. C. Swinhoe (fl.1910); H. E. Taylor (fl.1936-63); M. A. Théry; N. Theobald (fl.1960); R. J. Tillyard (1881-1937); W. W. Watts (1860-1947); F. E. Zeuner (1905-63).

Clearly many museums and scientific libraries will have to have this book, but the price may deter the private individual, although in our view it is well worth the money. — J.M.C.-H.

¹Curiously, I can find no mention that it includes collections in private hands, although many of these exist, some of them of considerable importance. J.M.C.-H.

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SPECIAL INDEX

COMPILED BY S. N. A. JACOBS (LEPIDOPTERA)

AND A. A. ALLEN (OTHER ORDERS)

For British Lepidoptera this Index follows the nomenclature of *A Check List of British Insects*, Part 2 by Kloet & Hincks (1972), brought up-to-date to correspond with the *Label List of British Butterflies & Moths* by Bradley & Fletcher (1979). Where a contributor has used a synonym, a cross reference is given. Any newly described taxa (species, genera, etc.) are distinguished by bold (Times) type, and taxa new to British or newly recognised as British by an asterisk. Moreover, with *Orders other than Lepidoptera*, (1) A *bracketed* asterisk denotes the reinstatement of a species long omitted from the British list, or the confirmation of one previously doubtful; (2) A formerly subspecific taxon raised to specific rank is treated as an addition to the fauna, but a correction of identity is not; and, finally (3) The "equals" sign indicates a *new* synonym, i.e. published for the first time; italics without this sign, recent synonymy that may be unfamiliar to many.

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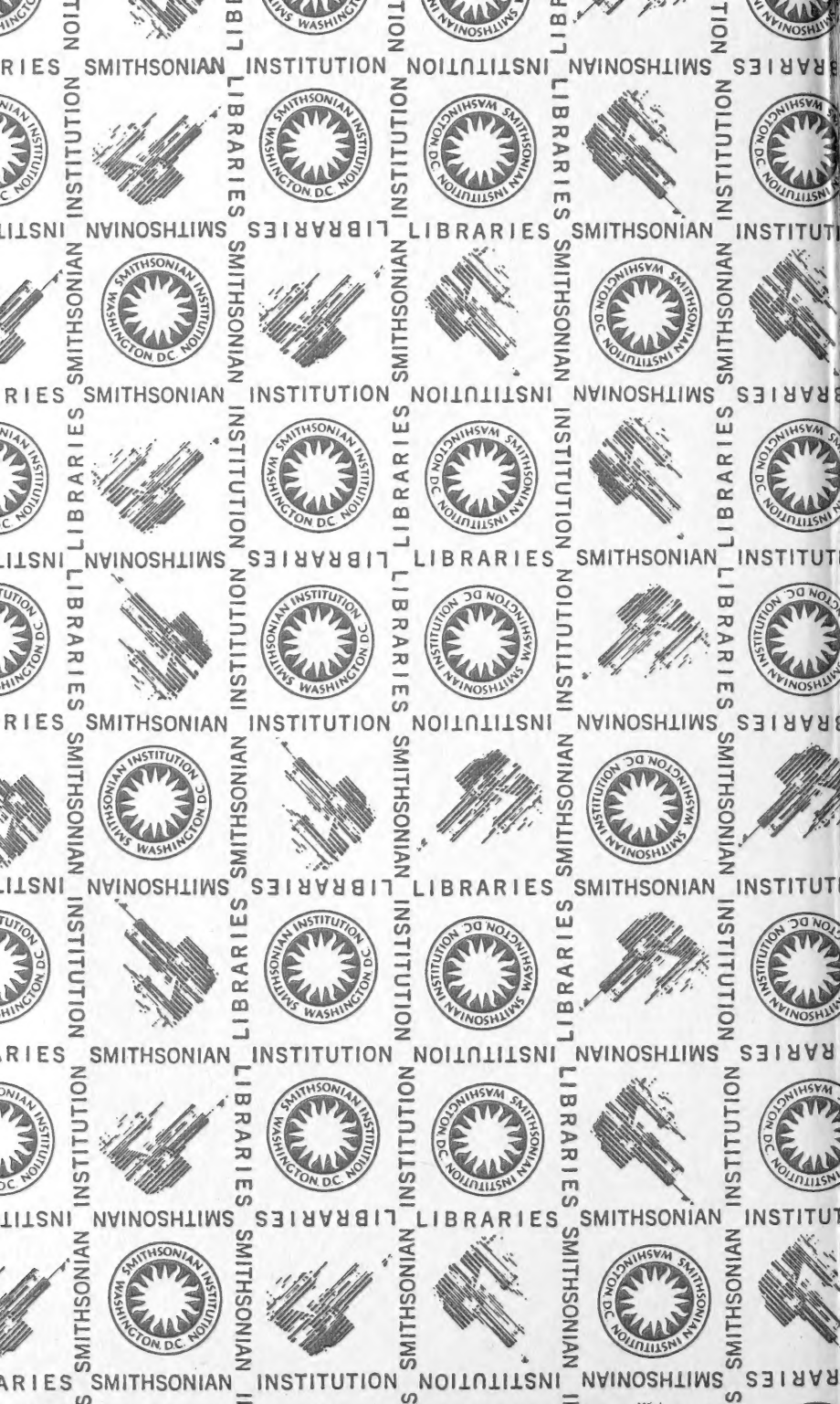
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